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Making Large Size Hammer-Welded Pipe

Penstocks, Tanks, Stills, Digesters and Receivers—Methods
of Forming and Welding—Finishing to
Size Important

BY GEORGE F. TEGAN*

LARGE diameter pipe made by the National Tube Co. at its Christy Park works, McKeesport, Pa., which was started as an experimental unit about four years ago, has been advanced to the commercial stage through additions to the equipment in the past year and now has the same departmental standing as the other divisions of the company. Decision to expand the facilities of this plant for increased production rests upon the belief, founded on the experiences of the past four years, that the surface of the field of service for the products of this plant has been only scratched. Another consideration was that definite specifications for the open-hearth steel plates used have supplanted the tentative ones of a few years ago.

While the range of sizes of large diameter pipe,

from 20-in. to 96-in., would seem to encroach upon the lap-welded pipe field, it is well known, notwithstanding that price lists of lap-welded pipe embrace sizes up to 30-in., pipe of this sort exceeding 20-in. in diameter is difficult to make and probably not more than one company has the equipment of the size and capacity to be able to furnish it. Hammer-welded pipe, therefore, really supplements lap-welded pipe, instead of competing with it. Furthermore, the uses for the former are quite distinct from those of lap-welded pipe. Its larger fields of service are found in water, gas, steam and various types of pumping or power plant installations, while it is adapted also to the construction of tanks, boiler shells, stills, digesters and receivers. The latter, however, are minor products with the National Tube Co. and are taken chiefly as fill-in business.

Cast iron and riveted steel pipe have most to lose by the advance in the use of hammer-welded pipe.

*Resident Editor at Pittsburgh of THE IRON AGE. A preliminary story on this process appears at page 1130 of our issue of Nov. 3, 1921.

Flanging Machine, Upon Which All Sorts of Joints Are Possible, Is of Heavy, Rugged Construction. Pipe is heated in diamond in center of frame, behind which are the forming tools



Insert Shows at Left a 40-In. Diameter Pipe the End of Which Has Been Reduced to 30 In. in Flanging Machine

Whether in penstocks, water lines for hydroelectric plants, irrigation purposes or city and industrial water supply, gas lines or air and steam conduits, the prime desideratum is low friction loss; in this respect hammer-welded pipe, with its smooth walls, free from scale and projections at the joints, has a distinct advantage over both cast iron and riveted pipe. Reliable tests have shown the velocity of flow in cast iron pipe to be 10 per cent less than in hammer-welded pipe, while that for riveted pipe is about 18 per cent less than for welded pipe. This, however, is only one of several advantages enjoyed by the latter. In penstocks, for example, it has been found that the lower friction loss permits the use of pipe of considerably smaller diameter than when riveted pipe is used and also that pipe of lighter wall thickness can be used. This economy of weight not only means a saving in transportation and erection costs, but also in the first cost, since the price is determined by weight.

In a penstock bearing 270 lb. pressure and passing 200 cu. ft. of water per second, it has been calculated on the basis of the velocity of flow that hammer-welded pipe made from $\frac{5}{8}$ -in. plate, and 48 in. in diameter, would be the equivalent of a 52-in. pipe of 13/16-in. plate, triple riveted longitudinally and double riveted at the circular seam. The weight of the riveted pipe is about 540 lb. per ft., as against 340 lb. for the welded.

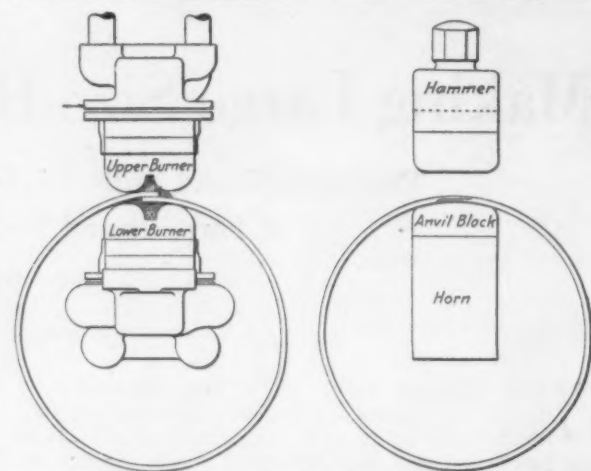
In water lines, the smooth wall of hammer-welded pipe is a help in reducing corrosion, and in gas lines the chances of leaks are lessened by the welded instead of the riveted jointings. Tests of the efficiency of the welds have disclosed tensile strength of 92 per cent, where fracture has occurred at the weld. Such strength greatly exceeds any other method of jointing and consequently there is greater protection against bursting at high pressures. Since great care is exercised in the manufacture of the pipe to insure circularity, the danger of collapse is minimized, as a collapse usually can be traced to a flat side, especially in cases of sudden or accidental emptying of the line, creating a combination of interior vacuum and external pressure. In cases of bursting, steel, being ductile, will bend instead of shattering, as does cast iron.

Plant Laid Out for This Special Work

The hammer-welding plant is housed in an L-shaped building, the feature of which, aside from its substantial construction and the incorporation of modern ideas for lighting and ventilation, is an absence of overhead wiring and piping. Only the 24-in. main for water gas, the fuel used in the welding machines, is above the ground. The longer leg of the building, in which

the pipe is manufactured, contains two bays, one 90 ft. and the other 50 ft. wide. The smaller section, located at right angles to the larger unit, is 75 ft. wide; in this building are done the testing and finishing. Both sections are served by overhead cranes, while a special type charging crane serves the bending rolls, welding machines and annealing furnace. Plates entering the plant aboard cars are handled exclusively by magnets.

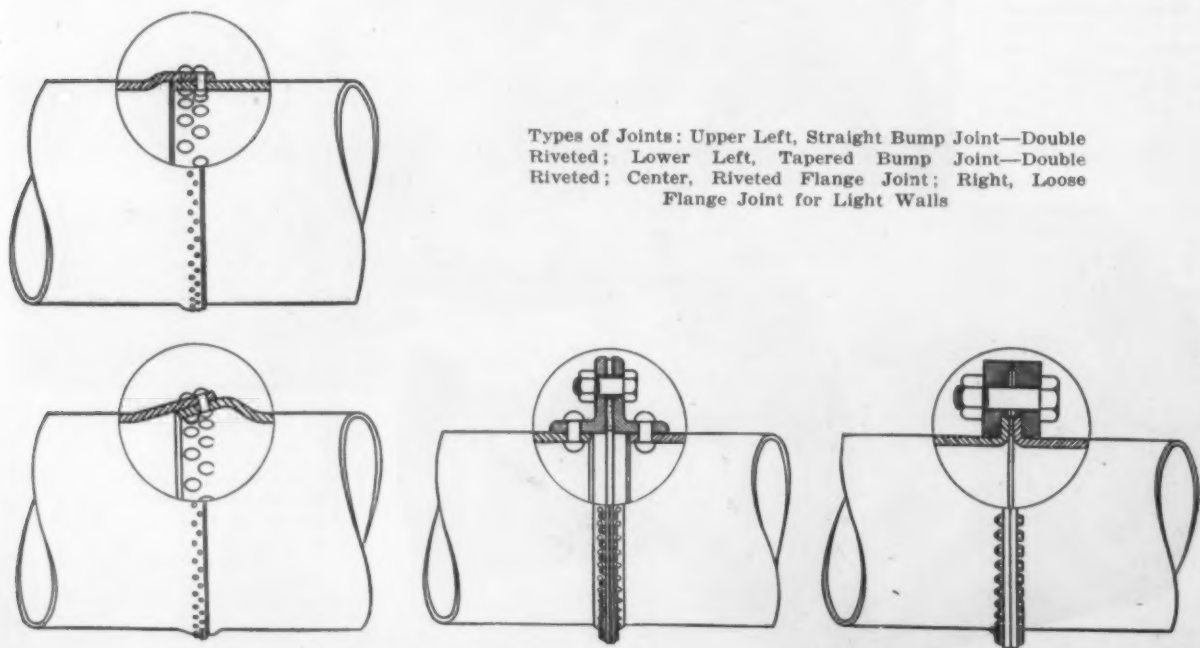
Steam heating, high and low-pressure air and water



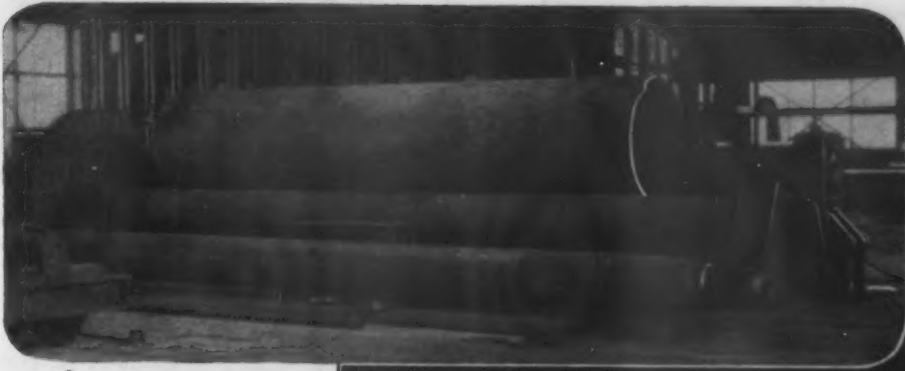
Cross-Section of Horn, Showing the Anvil Block, Hammer and Upper and Lower Burners. The shaded area between burners shows how the part to be welded is bathed in white hot gases

and electric lines, carried in an underground concreted tunnel, 4 ft. x 6 ft. in section, not only are protected from ordinary damage, but are located so as to be readily accessible for inspection, alteration or repairs. Water gas is carried in a 24-in. main near the eaves on the outside of the building. Producer gas for the heating and annealing furnaces is conveyed from the gas house to the hammer-welding department by underground brick flues. The water gas is generated in a separate unit, built especially for serving the hammer-welding machines. Other services are furnished by power plants installed for other departments of the Christy Park works.

Manufacture of hammer-welded pipe is largely a mechanical process and, running to large diameters of heavy wall thickness, it readily can be visualized that



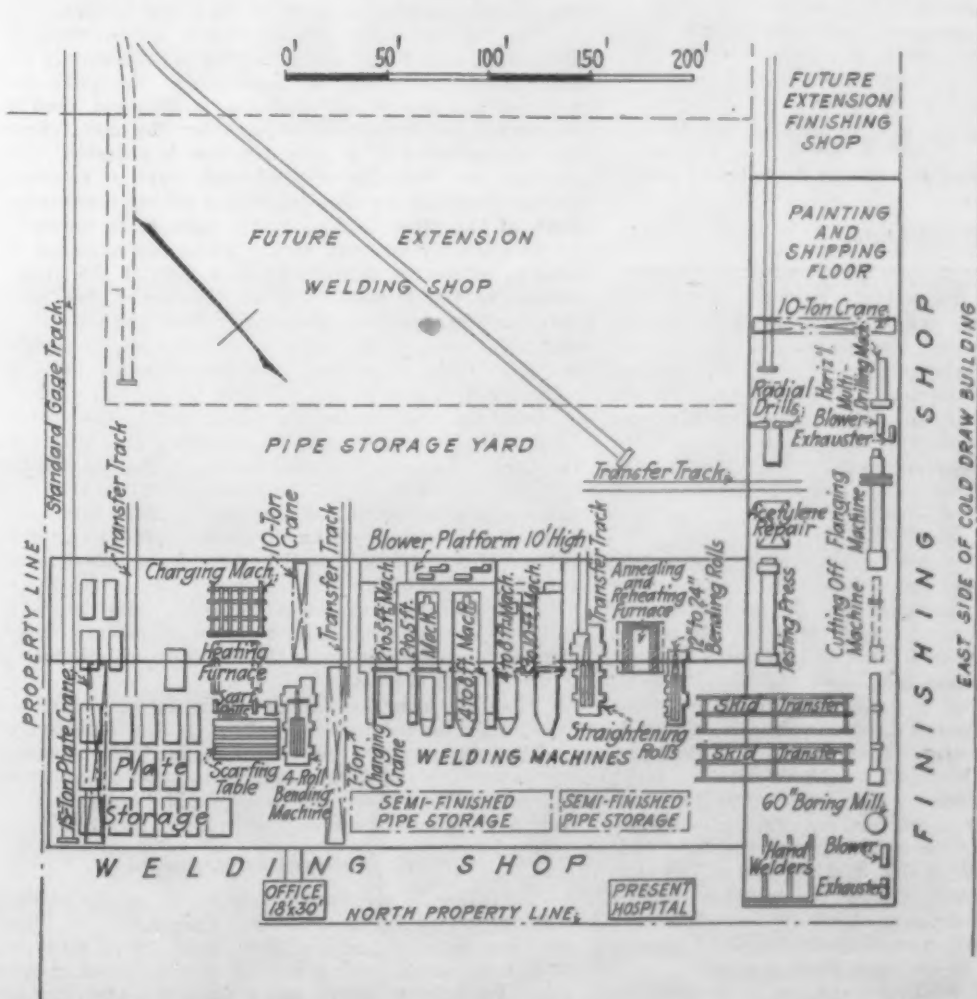
Types of Joints: Upper Left, Straight Bump Joint—Double Riveted; Lower Left, Tapered Bump Joint—Double Riveted; Center, Riveted Flange Joint; Right, Loose Flange Joint for Light Walls



Above—Plate-Bending Rolls Are Used in Truing the Pipe After It Has Been Annealed. The rolls shown are 30 ft. long and the pipe in the rolls is 60 in. diameter, with a wall thickness of $1\frac{1}{4}$ in. One man in pulpit back of left end of rolls operates entire machine. The plant contains also a set for bending plate and truing pipe 20 ft. in length



Special Charging Equipment Suspended from Overhead Traveling Crane Is Used to Convey Pipe from Bending Rolls to Welding Machines, then to Annealing Furnace and Back to Rolls for Truing. This view is of 60-in. pipe being removed from rolls following truing operation and removal of scale, which is done by spraying water on both interior and exterior surfaces in the later stages of the truing operation



Plant Layout in the Form of an E, with Welding Shop at Right Angle to Finishing Shop

rugged equipment of special design is necessary. In cases where the pipe to be made is of wall thickness of 1 in. or less, the first step is to place the flat plates on the transfer table leading to the bending rolls. There are two sets of these rolls, one capable of taking plates up to 31 ft. and the other up to 21 ft. in length. They are exceedingly powerful and can bend, cold, plates up to 1 in. thick into a 30-in. diameter cylinder.

Most of the pipe produced is 1 in. or less in wall thickness but, in the case of thicker pipe, the plate first is placed upon the charging machine, which then is moved to a correct position behind the heating furnace. Chain-driven fingers slide the plate forward into the heating furnace. The furnace is similar to the regular skelp-heating furnace but, of course, is larger, to accommodate the larger plates. It has a sand covered hearth 17 ft. x 23 ft. and a low arching roof, with a line of vertical ports on either side. Regenerative

itudinal welds and one for circumferential jointing of two lengths. Another machine for the latter purpose is located at one end of the finishing and testing section of the building, giving the plant a total of seven machines. The carriage for supporting pipe during the longitudinal welding operation is mounted on a track, so that it and the pipe to be welded can move backward and forward over the horn which supports the anvil. The pipe rests on two sets of rollers, one pair forward and one pair back. The beams bearing these rollers are capable of vertical movement, each pair independently, and the rollers are capable of transverse motion as well. Controls are located on the operating platform on the left side of the machine.

How the Welding Is Done

The anvil is keyed to the front end of the horn, which is a heavy alloy steel forging about 12-in. deep and reaching clear of its support a sufficient distance to accommodate lengths of pipe from 21 ft. to 31 ft. The horns actually are much longer, as they rest upon heavy rocker bearings and extend back and are balanced by heavy counterweights. This makes the horn relatively rigid. A hydraulic piston supports the counterweight at rest and raises or lowers the anvils to give slight manipulation to suit conditions.

The pipe is heated by burners inside and outside. These are mounted directly in front of the horn, the upper one capable of being raised or lowered to prevent fouling the work and to enable the operator to judge of the temperature of the metal being heated. The burners are 20 in. long and heat an area about 2 ft. long by 16 in. wide. In a plate $\frac{3}{4}$ in. thick this requires between 30 and 60 sec. to bring to temperature.

An area is heated and then the carriage moves in, bringing the hot section directly over the anvil and below the hammer, swung from a beam directly above. Some of the hammers are air driven, while others are motor powered. Gas and air pipes are carried along the side of the horn and project beyond the anvil, forming the overhanging support of the lower burner.

The fuel is water gas, giving a temperature of about 1900 deg. Fahr. and requiring approximately $2\frac{1}{2}$ volumes of air for perfect combustion. As quick and uniform mixture of air and gas is obtained readily, danger of the formation of scale on the metal from the impingement of a poor mixture is obviated. All gas lines are liberally supplied with traps or receivers having explosion doors sealed with a rubber diaphragm. Each of the pipes leading to the burners is regulated by an ordinary one-way cock. These are adjusted by trial to insure the delivery by each pipe of the proper volume to the burner. Beyond the cocks are gate valves, all operated simultaneously from the pulpit. A match thrown into the gas stream lights the burner for the first time; thereafter, the incandescent brick is sufficient to ignite it.

Once the cradle rollers are adjusted to the correct height, the carriage moves in, carrying the pipe over the horn. An area is heated, the gas is turned off, the carriage moves to bring the heated spot between the hammer and the anvil and then the welding starts—the nearest approach mechanically to the hand forging of the old time blacksmith. Cohesion of the metal is accomplished by a few light blows. The force of the blows is increased as the metal cools. Air from the cylinder is exhausted against the seam directly below the hammer, blowing away the loosened scale before it is driven into the hot metal.

Allowing from one-half to one minute to bring the area to be welded to temperature, a few seconds for shifting the carriage and time for about 100 blows of the hammer, about 3 min. suffices to weld about 12-in. of seam. Thus about an hour would be required to weld a 20-ft. pipe from end to end.

Strains Relieved by Annealing

Annealing to relieve the strains set up by welding is the next step in the operation. This is done in a gas-fired regenerative furnace, 10 ft. high, 12 ft. wide and 33 ft. long inside, with a row of vertical ports at each side. Its massive doors swing from the side and are operated by hydraulic racks, engaging pinions keyed

SPECIFICATIONS of the American Society for Testing Materials for open-hearth steel plates, to which the steel used at Christy Park conforms, are as follows:

Chemical Composition, Per Cent

Carbon—	Grade A	Grade B
For plates $\frac{3}{4}$ in. and under in thickness . . .	0.15 max.	0.20 max.
For plates over $\frac{3}{4}$ in. in thickness	0.17 max.	0.22 max.
Manganese	0.35 to 0.60	0.35 to 0.60
Phosphorus	0.06 max.	0.06 max.
Sulphur	0.05 max.	0.05 max.

Physical Properties and Tests

	Tension Tests	
	Grade A	Grade B
Tensile strength, lb. per sq. in., minimum	45,000	50,000
Yield point by drop of beam	*0.5	*0.5
Lb. per sq. in., minimum . . .	24,000	27,000
Elongation in 8 in., per cent	28	25

Hydrostatic Tests

$$P = \frac{2St}{D}$$

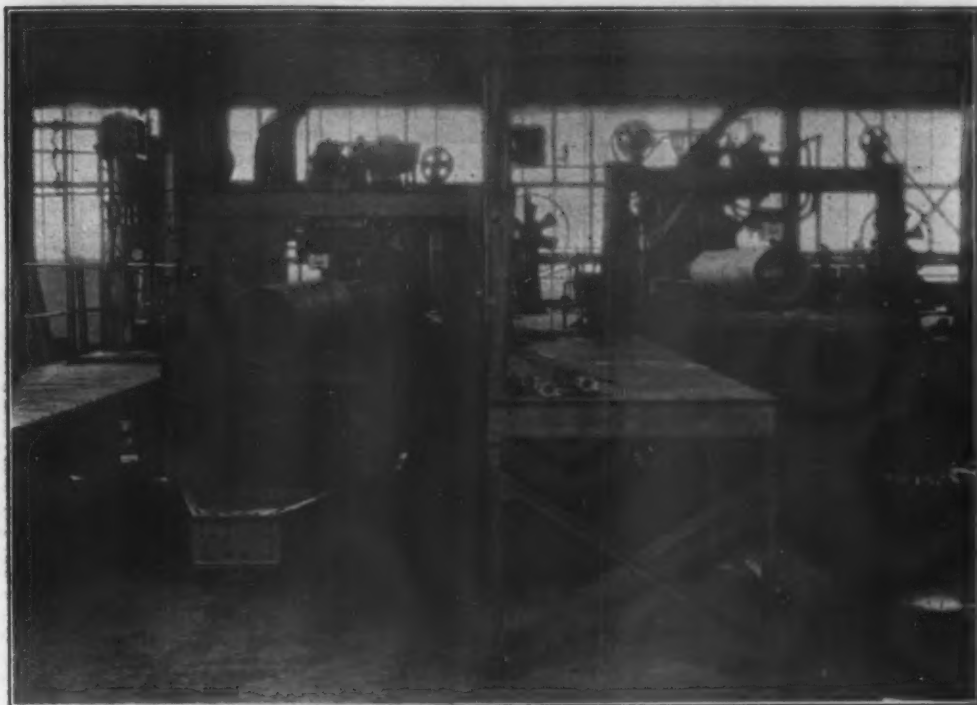
in which P =test pressure in lb. per sq. in.; S =allowable fiber stress=15,000 lb. per sq. in.; t =thickness of wall in in. and D =outside diameter of pipe, in inches.

*Times the tensile strength.

checker chambers are located below the floor line on each side, this arrangement making for economical use of producer gas. When the plate is ready for bending it is pushed out of the front of the furnace by the charging machine, through the scarfing rolls to the transfer table, on which it travels to the bending rolls. A temperature of 1900 deg. Fahr. is necessary, as the bending requires at least 5 min. and must be completed before the temperature of the steel drops into the brittle range.

The bending rolls consist of one large upper roll, and three lower ones of smaller diameter. One bottom roll is directly under the upper roll, the others flanking it. The steel introduced, it is gripped by the bottom rolls and worked back and forth as illustrated on page 1265. The center bottom roll forces the steel tight up to the upper roll, this to insure a grip on the plate, since the driving power is in the upper roll, which is geared to a 175-hp. motor. The final stage of the operation finds the plate bent into a cylinder with the edges of the plate overlapping. The lower rolls then are dropped back to their lowest position and the end housing swings outward from a hinge near the floor line, freeing the upper roll, which lifts up clear. The electric charging crane then removes the cylinder over the end of the roll and deposits it on the carriage of a welding machine. All operations on the bending machine are controlled by one man from a pulpit.

A battery of six welding machines is grouped between the two sets of bending rolls, five being for lon-



Two Units of the Battery of Longitudinal Welding Machines. At the left is a 48-in. motor-driven welder; the other, a 60-in. welder, is air driven. Water gas is used to heat the seam preparatory to welding. Pipe rests upon the carriage and the horn which supports the anvil inside of pipe is a 12-in. beam to which are attached the air and gas pipes

Macro photograph of Weld, Showing Junction of the Two Pieces of Metal



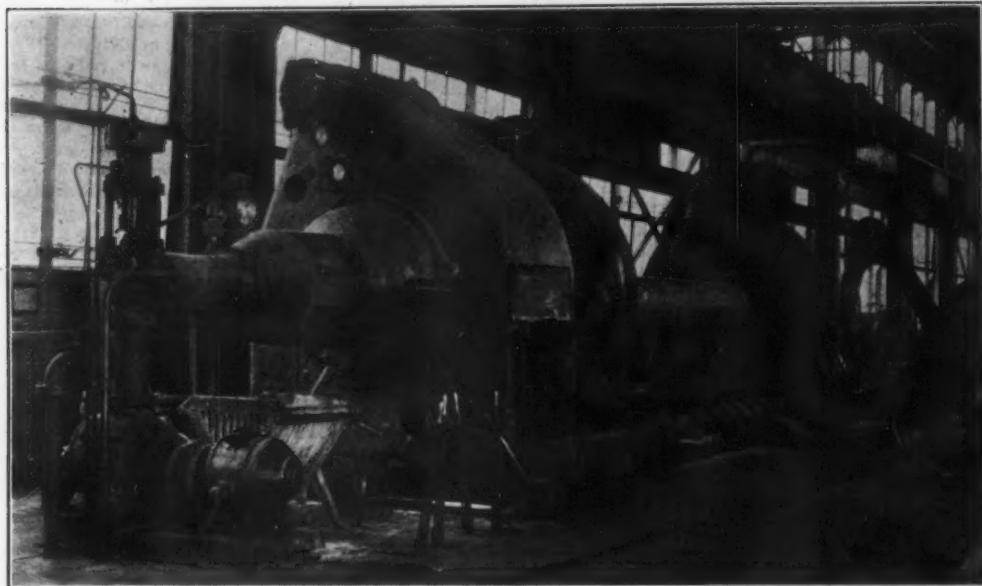
To Take Pipe 20 to 30 Ft. in Length and from 20 to 120 In. in Diameter an Annealing Furnace of Unusual Size Is Required. This regenerative furnace uses producer gas

to the hinge bolt. The furnace is maintained at about 1650 deg. Fahr. The pipe is allowed to "soak" for approximately 30 min. after reaching annealing temperature. It then is conveyed to the bending rolls and rolled over many times to insure equal curvature in all parts. During this operation water is played on both exterior and interior surfaces to remove scale.

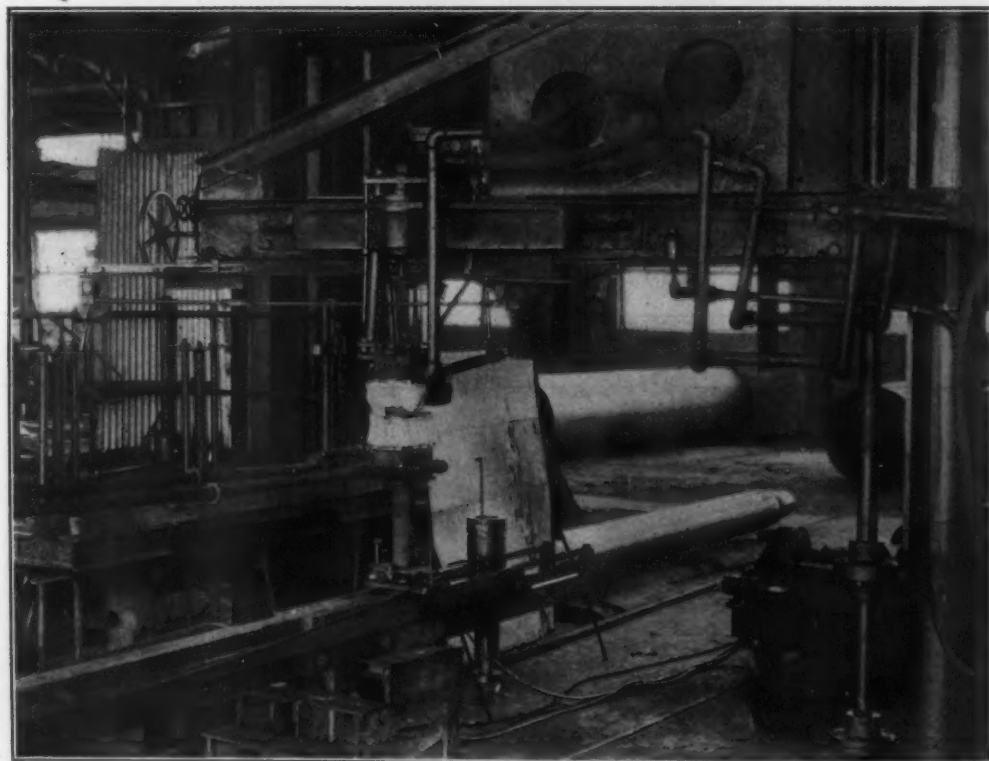
Then come the finishing operations. The pipe is mounted in a large lathe having a bed 50 ft. long, this that it may accommodate sections made of two lengths

an efficiency of the joint, based on the tensile strength, of 92 per cent.

The testing machine is a huge hydraulic affair, with 41-ft. reach and 2500 lb. per sq. in. capacity. It is customary to subject all pipe to a 50 per cent overload. Following the hydraulic test of the pipe, it goes to the sizing machine, upon which the ends of the pipe are trued to size. This is used also to expand or contract or shape the ends of the pipe in preparation for the flanging operation. If the joints are to be perfect, it is



Hydraulic Testing Machine, on Which Each Length of Pipe is Subjected to a Pressure of from 150 to 2000 Lb. per Sq. In. Sizing machine, on which both expansion and reduction of ends is performed, is similar in appearance. It is necessary that the ends of the pipe shall be of accurate size, so that joints shall be perfect



Circumferential Welding Machine for Welding Together Two Lengths of Pipe

welded together circumferentially. Two separate carriages can be set the proper distance apart and the tools then cut off each end simultaneously. These crop ends are used at times to determine the relative efficiency of the weld.

Tests taken from pipe which had passed inspection and where fractures had actually occurred at the weld showed an average yield point of 31,390 lb. per sq. in. in the metal and 29,260 lb. per sq. in. in the weld; an ultimate strength of 53,690 lb. per sq. in. in the metal and 49,480 lb. per sq. in. in the weld; this would mean

necessary first that the ends of the sections of pipe shall be accurately sized, which is the primary function of the sizing machine. Forming of flanges is done on another machine, this of massive proportions. The illustration shows some of the many styles of joints that the company is called upon to make and the flanging machine is called into play on many of them. Rivet holes for joints are made by drilling or punching. The completed pipe is given a rigid, final inspection for shape and condition and, after painting with a protective coating, it is ready for shipment.

OCTOBER STEEL OUTPUT

Increase Over September About 6.5 Per Cent in Daily Rate—Yearly Rate Was About 35,800,000 Tons

The increase in steel ingot production in October was not as large as in September, though it was substantial. Last month's increase was 6970 tons per day or about 6.5 per cent against 10,519 tons or nearly 11 per cent in September.

The statistics of the American Iron and Steel Institute show that the October output of the companies which made 94.84 per cent of the country's total in 1923 was 2,950,901 gross tons. Assuming that the 5.16 per cent not reporting produced at the same rate, a total October output is indicated of 3,111,452 tons. The corresponding annual rate is about 35,800,000 tons or 66 per cent of capacity, against 62.5 per cent in September.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Monthly Production of Steel Ingots, Reported by Companies Which Made 94.84 Per Cent of the Steel Ingot in 1923 (Gross Tons)

Months	Open-Hearth	Bessemer	All Other	Approximate	
				Calculated Monthly Production All Companies	Daily Production All Companies Gross Tons
1924					
Jan.	2,766,534	667,032	12,577	3,633,639	134,579
Feb.	2,902,641	695,905	14,085	3,809,185	152,367
March ...	3,249,783	706,801	15,260	4,187,942	161,075
April ...	2,575,788	573,381	12,356	3,333,535	128,213
May ...	2,060,896	425,099	6,648	2,628,261	97,343
June ...	1,637,660	310,070	2,622	2,056,466	82,259
July ...	1,525,912	241,880	5,162	1,869,416	71,901
Aug. ...	2,042,820	361,781	5,759	2,541,501	97,750
Sept. ...	2,252,976	409,922	6,844	2,814,996	108,269
Oct. ...	2,505,403	438,468	7,030	3,111,452	115,239
10 Mos. ...	23,520,413	4,830,339	88,343	29,986,393	114,890
1923					
Jan.	2,906,892	728,270	9,467	3,841,095	142,263
Feb.	2,613,564	669,903	10,797	3,471,843	144,660
March ...	3,046,309	799,525	12,841	4,066,680	150,618
April ...	2,974,579	772,485	13,933	3,963,736	158,549
May ...	3,136,558	847,418	16,719	4,216,355	156,161
June ...	2,821,239	737,845	15,483	3,767,256	144,894
July ...	2,658,449	680,884	11,496	3,531,458	141,258
Aug. ...	2,796,370	701,059	9,326	3,695,788	136,881
Sept. ...	2,562,771	613,709	8,602	3,356,776	134,271
Oct. ...	2,735,513	649,452	9,163	3,577,091	132,485
10 Mos. ...	28,252,244	7,200,550	117,827	37,488,078	144,185
Nov. ...	2,348,361	616,335	9,309	3,134,321	120,551
Dec. ...	2,135,898	570,004	10,912	2,863,266	114,531
Total	32,736,503	8,386,889	138,048	43,485,665	139,825

Workmen's Compensation Act Defeated

ST. LOUIS, Nov. 11.—Proposition No. 6, a workmen's compensation act proposed by initiative in the election in Missouri last Tuesday was defeated by an overwhelming majority. The act was drawn entirely by labor leaders and was fought by the Associated Industries of Missouri and other organizations of employers as being too drastic and one-sided. Missouri has no workmen's compensation law.

Building Construction Increased in October

Building contracts awarded in October in the 36 Eastern States are reported by F. W. Dodge Corporation at \$410,090,800, an increase of 19 per cent over September and an increase of 14 per cent over October of last year. The increase is attributed largely to a number of big public works and utilities projects. These items amounted to \$101,224,000 in the month's total, or nearly 25 per cent of all construction. This group was surpassed only by residential construction, which amounted to \$166,198,900, or 41 per cent of the total. Commercial buildings provided \$55,969,100, industrial buildings \$29,032,800 and educational buildings \$27,675,400.

For the first 10 months of the year the total amounts to \$3,775,093,500, an increase of 12 per cent over the first 10 months of 1923. This increase was particularly heavy in New York State and northern New Jersey, which accounted for 30 per cent of the total construc-

tion, with \$1,119,805,700, or 34 per cent more than in the first 10 months of 1923. While the total in the Central West showed no gain over 1923, it amounted to \$878,504,200, or 23 per cent of the aggregate. The Pittsburgh district in 10 months showed \$461,854,200, which was 11 per cent less than in 1923. The South-eastern States, with \$523,043,900, record an increase of 23 per cent over the first 10 months of 1923 and a gain of 7 per cent over the entire 12 months of 1923. A similar result is shown in the Middle Atlantic States, where the \$414,757,500 of new construction in 10 months is an increase of 27 per cent over 10 months of 1923 and of 11 per cent over all of 1923. New England in 10 months provided \$299,214,400, which is 6 per cent more than in 10 months of 1923.

Less Metal-Working Machinery Exported from United States

September exports of metal-working machinery are reported by the Department of Commerce at 3574 units with a value of \$575,460, compared with 4971 units valued at \$813,241 in August, and with 3763 units valued at \$671,932 in July. The details are shown in the following table, which differs from the corresponding table on page 1249 of last week's issue. The figures last week were in error and are here corrected:

	September, 1924		August, 1924	
	Number	Value	Number	Value
Lathes	43	\$78,757	112	\$141,802
Boring and drilling machines..	176	49,891	175	49,711
Planers, shapers and slotters..	22	17,201	25	41,923
Bending and power presses....	21	33,954	32	36,644
Gear cutters	8	19,088	30	37,721
Milling machines	55	71,013	45	73,923
Thread-cutting and screw machines	74	33,299	139	46,058
Punching and shearing machines	11	2,937	23	24,451
Power hammers	22	36,139	117	31,937
Rolling machines	37	13,188	...	...
*Sharpening and grinding machines	259	134,770	242	214,421
Chuc's, center, lathe, drill and other metal-working tools....	1,732	27,197	3,199	36,896
Pneumatic portable tools.....	1,114	58,026	832	77,954
Total	3,574	\$575,460	4,971	\$813,241

*Includes number of external and internal grinding machines only; "other sharpening and grinding machines" are reported now by weight instead of by number.

Compared with the previous month, September showed a heavy decrease in the number and value of lathes and the value of planers, shapers and slotters and of gear cutters. The punching and shearing machines almost disappeared, while there was a heavy decrease in value of sharpening and grinding machines. Only in power hammers and in rolling machines was there a substantial gain in value.

Dinner in Honor of R. D. Landrum

On Monday night, Nov. 3, R. A. Weaver, editor of *Enamelist* and president Ferro Enamel Supply Co., Cleveland, gave a dinner at the University Club, Cleveland, in honor of R. D. Landrum, vice-president Vitreous Enameling Co., Cleveland, and also president of the American Ceramic Society. In his response, Mr. Landrum spoke of the past and future of the enameling industry and pointed out that every year new fields are being opened to the enameling trade. He said that when he entered the business as a chemist the only field open was for kitchenware, with some little business in the bathtub industry. Since then the demand has greatly expanded.

Among those present were: R. D. Landrum and John Grainer, Vitreous Enameling Co.; H. D. Cushman, J. D. Henry, H. C. Luebbert and R. L. Williams, Ferro Enameling Co.; Carl W. Mehling, American Radiator Co., Buffalo; Paul Francis, American Stove Co.; C. A. Blackburn and H. E. Barker, Cleveland Metal Products Co.; H. E. Johnson, Cincinnati Enameling Co.; F. F. Allen, Enamel Products Co.; W. H. Wilson, Lewis-Shepard Co.; S. M. Jenkins, Celite Products Co.; F. Q. Thorpe, Brown Instrument Co.; H. M. Richards, American Rolling Mill Co., and J. C. DeVol, A. B. Stove Co.

After the dinner the guests were entertained at the theater by Mr. Weaver.

Steels at Highest Working Temperatures

Changes in Strength and Other Properties of Carbon and Alloy Steels at 500 to 1200 Deg.—Range of "Reduced Malleability" in Hot Working

BY P. EYERMANN*

THE importance of an accurate knowledge of the properties of steels at high temperatures has long been recognized but progress has been slow, due largely to difficulties encountered in constructing suitable equipment. Recently a number of interesting reports have been published which give data of great value to designing engineers, metallurgists and others, but in the majority of cases tests have been restricted to temperature ranges extending only slightly above

Tests of steel at low temperatures (group 1) are often made by mills producing rails or concerns furnishing castings to manufacturers of refrigerating machines, etc.; the properties at ordinary temperatures (group 2) are universally studied and form, at this time, the basis of nearly all engineering design; the properties of various steels at moderately high temperatures (group 3) have recently received considerable attention and many reports such as those by H. J. French and W. A. Tucker¹ have been published and give much useful data. The least attention has been paid to tests at the very high temperatures (group 4) with which the writer is here mainly concerned, though much valuable empirical data, not generally available, have been accumulated by each manufacturer from observations in pressing, forging and rolling of his various products and some highly scientific experiments have been carried out in rolling mills² in which the "workability" of steels has been determined from power consumption and the pressures observed on the bearings of roll housings, etc.

The Steels Tested

The eight steels for which tensile test results are given fall into the following groups:

A. Carbon steels—used in such products as bars, shapes, rails, plates, large forgings, castings, tools, etc. The 3 heats tested contained respectively 0.05,

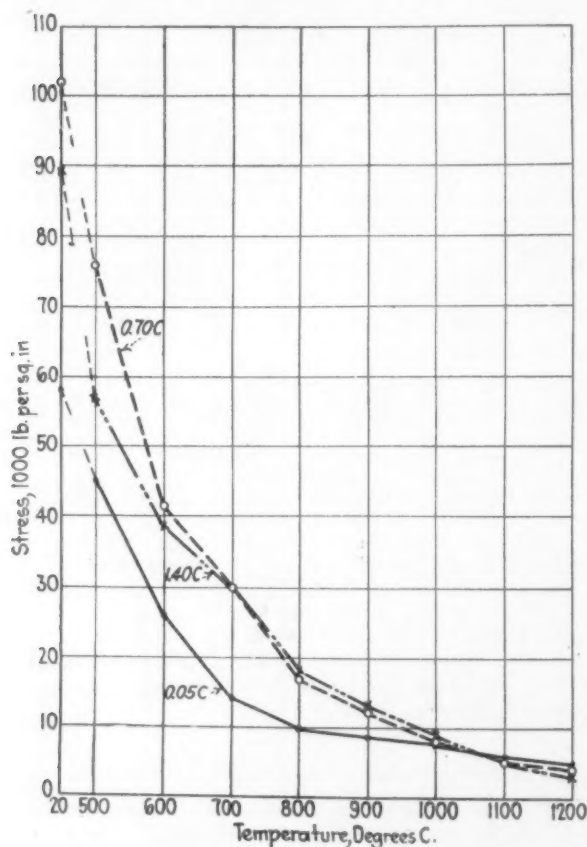


Fig. 1.—Tensile Strength of Carbon Steels at High Temperatures

those in which the metals may be employed in service. There is particular need for additional information covering higher temperatures close to the melting point and the ranges within which steels are ordinarily hot worked.

For this report the testing of steels may be considered in the light of four main divisions:

Steel below ordinary atmospheric temperatures (in the neighborhood of and below 0 deg. C.).

Steel at ordinary room temperatures in the neighborhood of 20 deg. C.

Steel at moderately high temperatures within the range encountered in service subsequent to manufacture.

Steel at the very high temperatures encountered during manufacture in such operations as forging, rolling, etc.

*Consulting engineer, Vienna, Austria.

¹ Strength of Steels at High Temperatures. THE IRON AGE, July 26 and Aug. 2, 1923, pages 193 and 275.

² Refer particularly to the reports and books of Dr. Puppe.

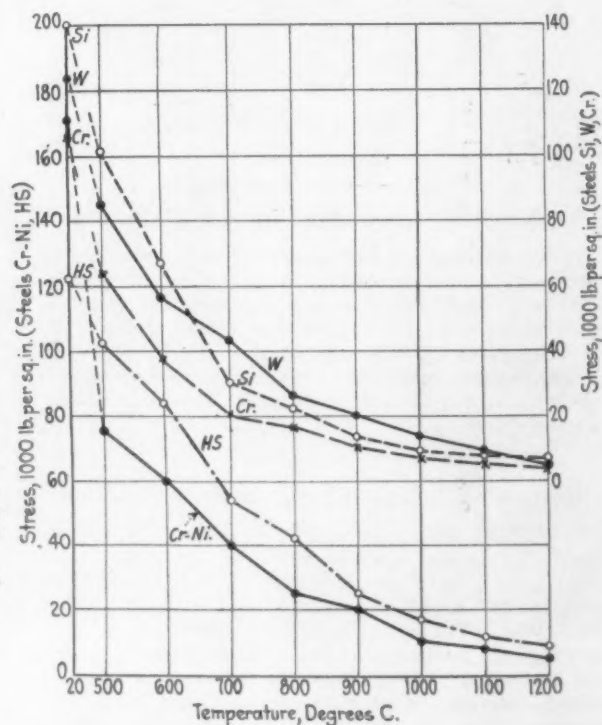


Fig. 2.—"Ultimate Stress" Values Obtained in Tensile Tests of Alloy Steels at High Temperatures. The term "ultimate stress" here refers to unit stress calculated from the reduced area of the broken test bar. Cr-Ni is the (3 to 1) nickel-chromium forging steel; HS is a commercial high-speed tool steel; Cr is a steel containing 2 per cent chromium; Si is a steel containing 2 per cent silicon, and W is a steel containing 3 per cent tungsten

0.70, 1.40 per cent carbon and 0.45, 0.40, 0.35 per cent manganese.

B. Special steels—containing one alloying element—which, in general, are subjected to heat treatment by the consumer and thus used in a condition quite different from that in which supplied by the manufacturer. In this group the three steels tested contained respectively 2 per cent silicon, 2 per cent chromium and 3 per cent tungsten.

C. Complex steels—containing two or more alloying elements. Of the two steels discussed in this group one was low in carbon and contained approximately 3 per cent nickel and 1 per cent chromium; the other was a commercial high-speed tool steel.

Experimental Results

Tensile Strength and "Ultimate Stress": The effect of rise in temperature on the tensile strength of the three carbon steels of group A is shown in Fig. 1. In the 0.05 per cent carbon steel the strength drops from 58,000 lb. per sq. in. at atmospheric temperatures to 45,000 lb. per sq. in. at 500 deg. C. and 4000 lb. per sq. in. at 1200 deg. C.; in the 1.40 per cent carbon steel

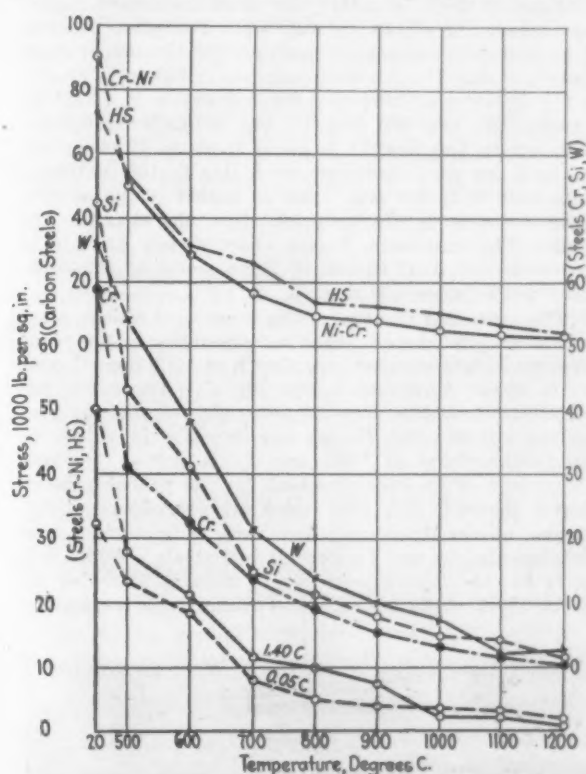


Fig. 3.—Proportional Elastic Limit of Carbon and Alloy Steels at High Temperatures. The alloy steels are the same as those referred to in Fig. 2

the decrease is from 88,000 lb. per sq. in. at 20 deg. C. to 56,000 lb. per sq. in. at 500 deg. C. and 2720 lb. per sq. in. at the highest forging or rolling temperature of 1200 deg. C. The steel containing 0.70 per cent carbon with a tensile strength of 105,000 lb. per sq. in. at 20 deg. C. broke at 75,000 lb. per sq. in. at 500 deg. C. and 3820 lb. per sq. in. at 1200 deg. C.

"Ultimate stress" values, in which the load is referred to the reduced area of the broken test bar, are shown in Fig. 2 for the alloy steels of groups B and C. The decrease in values with temperature rise above 500 deg. C. is clearly shown in all cases and requires no further comment.

Proportional Elastic Limit: As already pointed out by French and Tucker³ a knowledge of the elastic properties of steels at high temperatures is of great importance. This is especially true for the temperature ranges within which steels are subjected to various types of service, but likewise of real interest at higher temperatures. The proportional elastic limits of two carbon and five alloy steels representing the three groups already referred to are shown in Fig. 3.

It will be noted that the curve for the 1.40 per cent

³ Refer to (2).

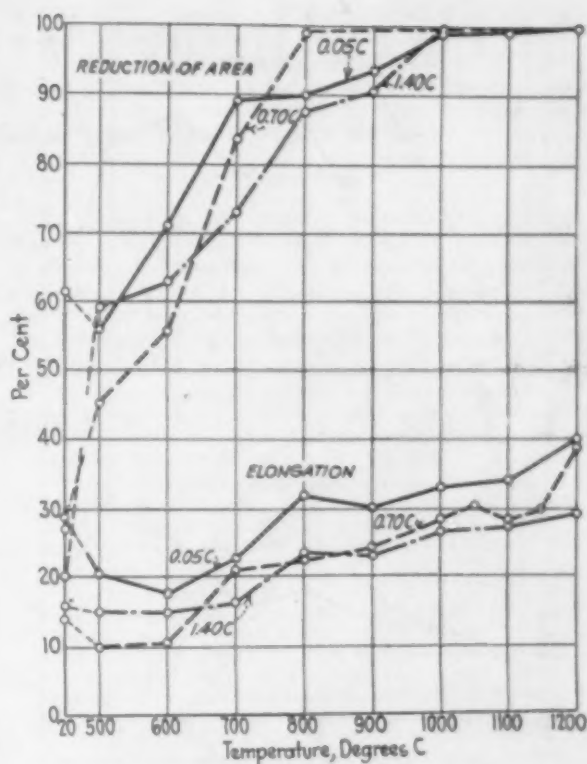


Fig. 4.—Elongation and Reduction of Area of Carbon Steels at High Temperatures. Test bars had a gage length of 11.3 times the square root of the cross sectional area

carbon steel crosses that for the soft steel (0.05 per cent) in the neighborhood of 1000 deg. C. and that the proportional elastic limits which were higher in the high-carbon heat at given temperatures below 1000 deg. C. are less than the proportional limits for soft steel at equal temperatures above. This effect is consistent with the experiences encountered in rolling high-carbon and very low carbon steels which, under similar con-

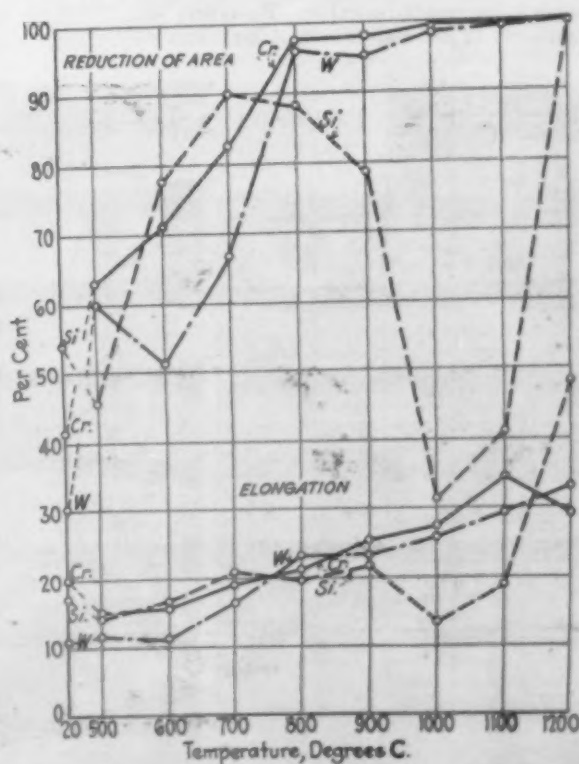


Fig. 5.—Elongation and Reduction of Area at High Temperatures of 2 Per Cent Chromium (Cr), 3 Per Cent Silicon (Si) and 3 Per Cent Tungsten (W) Steels. Test bars had a gage length of 11.3 times the square root of the cross sectional area

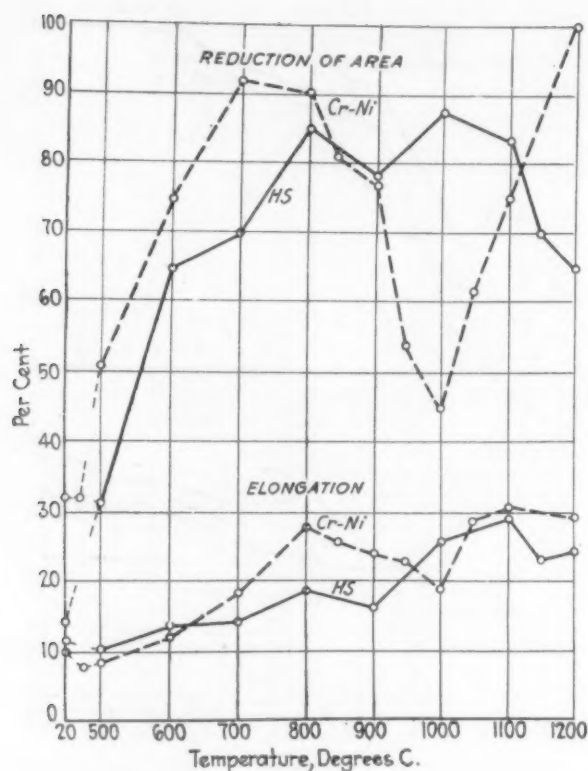


Fig. 6.—Elongation and Reduction of Area at High Temperatures of (3 to 1) Nickel-Chromium Forging Steel (Cr-Ni) and a Commercial High-Speed Tool Steel (HS). Test bars had a gage length of 11.3 times the square root of the cross sectional area

ditions of temperature and speed, behave quite differently as the rolling progresses and the temperature drops.

An interesting feature is shown in comparing results for steels of group B. At ordinary temperatures the silicon steel shows the highest proportional elastic limit, the chromium steel the lowest and the tungsten steel an intermediate value. However, this order of superiority is not maintained at high temperatures and

at 1200 deg. C. is as follows: (1) tungsten steel, (2) silicon steel, (3) chromium steel.

The effect of temperature rise between 500 and 1200 deg. C. upon the proportional elastic limits of the two steels in group C is quite similar to that upon the "ultimate stress" (refer to Fig. 2) and requires no further discussion. However, many of the observations made by practical mill men in working various steels are consistent with the effects shown in the described laboratory tests.

Elongation: Between 500 and 1200 deg. C. the changes in elongation with temperature are of the same general character as those for reduction of area in tensile tests; it will, therefore, suffice to discuss only the latter. Numerical values may be obtained and any direct comparisons readily made as both elongation and reduction of area are included in the same chart for each group of steels.

Reduction of Area: A study of the reduction of area in tensile tests is at least of as much importance as that of tensile strength and in relation to the hot working of steels is rather the most important factor considered. As shown in Fig. 4 the reduction of area of carbon steels generally increases with temperature above 500 deg. C. A small decrease in values is shown in the 3 per cent tungsten steel of group B (Fig. 5) between 500 and 600 deg. C., but at higher temperatures up to 800 deg. C. a rapid increase is observed. In the 2 per cent chromium steel this factor increases materially up to 800 deg. C. but at higher temperatures, as in the case of the tungsten steel, the changes are small. The curves in Fig. 5 show clearly that it is unwise to hot work either of these steels at temperatures much below 800 deg. C.

The reduction of area of the 2 per cent silicon steel is less at 1000 deg. C. than at atmospheric temperatures and highest values are shown at 1200 deg. C. and in the range from 700 to 800 deg. C. The curve for the nickel-chromium steel of group C is similar to that for the silicon steel, though the decrease in values in the neighborhood of 1000 deg. C. is not so marked. This range of "reduced malleability" is probably more clearly shown in Fig. 7 in which are reproduced photographs of the fractured test bars of a carbon, the nickel-chromium and high-speed tool steels. While this latter has the lowest reduction of area at 1200 deg. C. of the eight steels tested, some rather wide variations

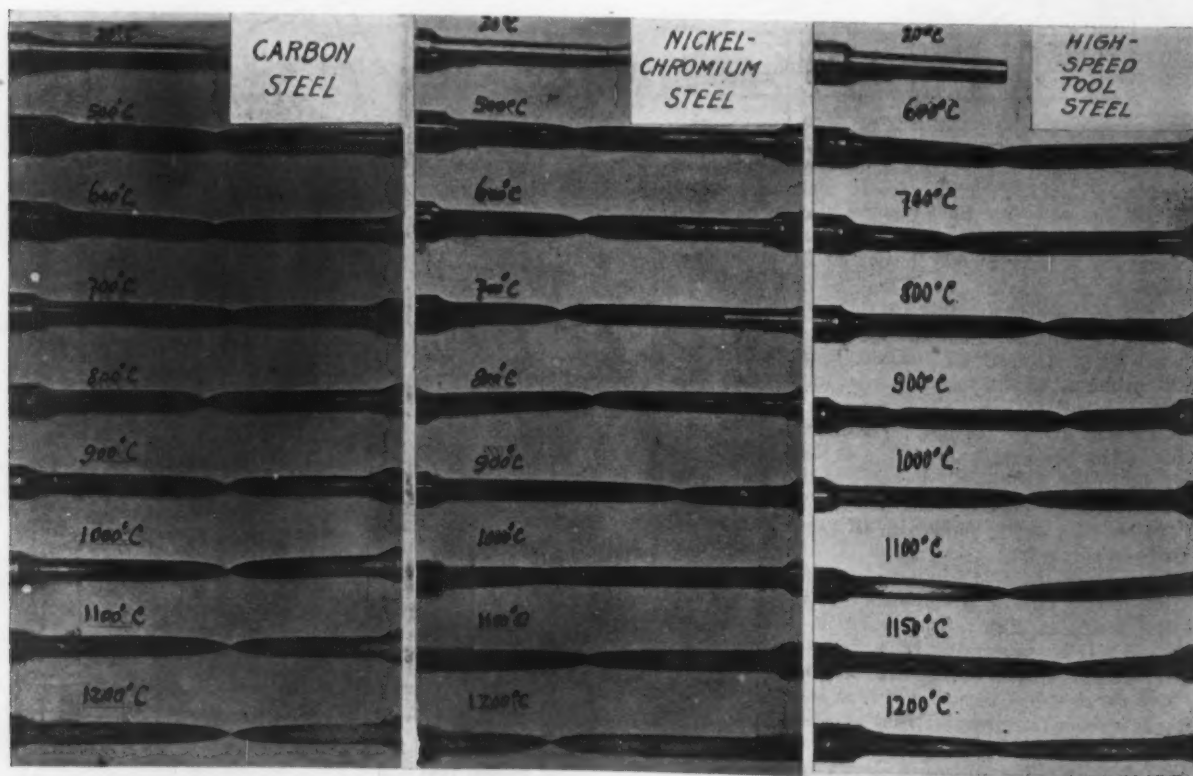


Fig. 7.—Fractured Test Bars of Carbon, Nickel-Chromium and High-Speed Tool Steels Broken in Tension at Various Temperatures

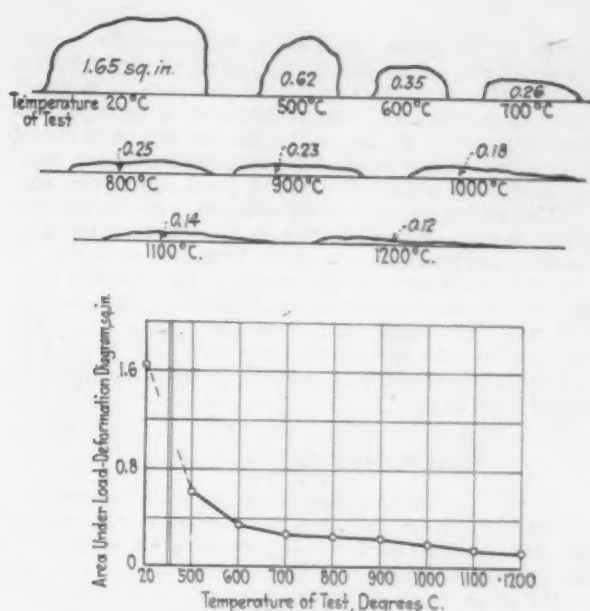


Fig. 8.—Autographic Load Deformation Diagrams for 0.05 Per Cent Carbon Steel Tested in Tension at Various Temperatures. The area in square inches is given within each diagram and in the lower half is shown graphically the effect of temperature upon this area

are observed, and the results in Fig. 6 are tentative.

Work to Produce Rupture: A factor rarely determined in tensile tests but of particular interest in relation to the properties of steels at high temperatures is the work required to produce fracture and represented by the area under the complete load-deformation diagram. Data of this type are shown in Fig. 8 for the 0.05 per cent carbon steel of group A. In this steel the area under the load-deformation curve at 500 deg. C.

is only a little more than one-third that obtained in tests at room temperatures; between 500 and 600 deg. C. it decreases with temperature at a fairly rapid rate but at higher temperatures the changes are small, the total decrease between 600 and 1200 deg. C. being about equal to that between 500 and 600 deg. C.

Conclusions

In view of the very great importance of the rate of loading at high temperatures, care must be exercised in drawing conclusions. The foregoing tests were all made under similar conditions, in this respect, and are therefore comparable. The following conclusions cover the temperature range from 500 to 1200 deg. C.

1.—With increase in temperature the tensile strength and "ultimate stress" decrease but only disappear at the melting point. The proportional elastic limit likewise decreases and there is a marked increase in the tendency to flow under slowly applied loads.

2.—Similarly the elongation increases with temperature in all steels tested except that containing 2 per cent silicon and the 3 to 1 nickel-chromium forging steel. In these two cases minimum or low elongation values are shown in the neighborhood of 1000 deg. C.

3.—In commercial carbon steels the reduction of area increases generally with temperature, but the changes are very small above 950 deg. C. and not of much practical importance. In the alloy steels tested the changes encountered with temperature vary widely with the composition of the steel. However, a marked increase in reduction of area up to 700 or 800 deg. C. is observed in all five alloy steels; at higher temperatures only a small increase, similar to that in carbon steels, is shown in the 2 per cent chromium and 3 per cent tungsten steels, while a sharp decrease and minimum values are found in the neighborhood of 1000 deg. C. for the (3 to 1) nickel-chromium and 2 per cent silicon steels. This range of "reduced malleability," which is to be avoided in hot working these steels, is followed by a rapid increase and high values of reduction of area at 1200 deg. C.

HEAVY COPPER CONSUMPTION

Domestic Deliveries Largest on Record—The Export Outlook

The fourth annual meeting of the Copper and Brass Research Association was held at 2.30 o'clock Nov. 6, at its offices, 25 Broadway, New York. The following were elected officers of the board of directors:

President R. L. Agassiz, president Calumet & Hecla Consolidated Copper Co.

Vice-president F. S. Chase, president Chase Companies, Inc.

Vice-president Walter Douglas, president Phelps Dodge Corporation.

Vice-President C. F. Kelley, president Anaconda Copper Mining Co.

Vice-president H. J. Rowland, secretary and sales manager Rome Brass & Copper Co.

Vice-president U. T. Hungerford, chairman U. T. Hungerford Brass & Copper Co.

Treasurer, Stephen Birch.

Secretary, George A. Sloan.

Manager, William A. Willis.

Following the meeting R. L. Agassiz, president of the association, issued the following statement:

Domestic deliveries of copper during the first 9 months of the year amounted to 1,156,000,000 lb., which, with consumption going on at the present rate, means a total for the year of approximately 1,600,000,000 lb. These figures represent refinery deliveries and take no cognizance of the very large consumption of secondary or scrap copper during the year. The domestic consumption in 1923 was about 1,470,000,000 lb., so it will be seen that not only has the record consumption of 1923 been maintained during the current year, but even substantially increased in volume.

The domestic industries showing the largest increased uses of copper, brass and bronze are the electrical and building fields. The former consumed about 25 per cent more metal than in 1923, while there was 12 per cent more used in building construction.

In the building field the use of brass pipe has shown a very large gain over that of any previous year.

To date there has been more than a 30 per cent increase over the first 10 months of 1923 and this ratio will, I believe, be maintained during the remainder of the year. There also has been a large increase in the use of copper for leaders, gutters and downspouts, copper roofing, and in the use of brass and bronze hardware fixtures.

Refinery exports of copper during the year should be more than 1,000,000,000 lb. During the first 9 months of the year exports were in excess of \$15,000,000 lb. as against total refinery exports during 1923 of about \$44,000,000 lb. The pre-war average was close to 800,000,000 lb., so that, in spite of the chaotic condition of affairs in Europe during the greater part of the year, there has been a substantially increased foreign business for American producers. If Europe had gone ahead in copper consumption at anything like the rate maintained in the United States, exports would have reached a huge figure.

With the working out of the Dawes plan I believe conditions abroad will show marked improvement and that copper exports during 1925 will be even greater than the figures show for 1924, in spite of the fact that this is a record year in this field.

Because of the excellent prospects for increased foreign business, and because there is nothing to indicate any falling off in domestic consumption, I believe the outlook for the copper industry is most encouraging. There is in this country today a much better understanding of copper and its uses. This has been brought about in the main by the educational work of the association, to be continued through 1925.

Besides 24 large copper mining and refining companies, the following representative copper and brass fabricating and distributing companies complete the membership:

American Brass Co.; Bridgeport Brass Co.; Chase Metal Works; Waterbury Manufacturing Co.; T. E. Conklin Brass & Copper Co., Inc.; Dallas Brass & Copper Co.; U. T. Hungerford Brass & Copper Co.; C. G. Hussey & Co.; Merchant & Evans Co.; Michigan Copper & Brass Co.; National Brass & Copper Co.; New England Brass Co.; J. M. & L. A. Osborn Co.; Richards & Co., Inc.; Rome Brass & Copper Co.; The Sandusky Foundry & Machine Co.; Scovill Manufacturing Co.; Taunton-New Bedford Copper Co.

Safety Device for Punch Presses

Positive action is a feature claimed for the punch press guard illustrated, which was developed two years ago at the plant of the New Process division of the American Stove Co., Cleveland, and is now being placed on the market by the Positive Safety Mfg. Co., 4400 Perkins Avenue, Cleveland.

This guard, which is known as the Possons positive punch press safety device, is designed so that the op-



The Operator's Hands Are Drawn Clear from Point of Operation as the Ram Descends. When the ram is up, the operator may reach to the floor

erator's hands are controlled by the mechanism to the extent that they are drawn from the danger zone by means of an attachment to his wrists in case the operator does not move them quickly enough to avoid injury. Production is said to be increased because the operator may work freely without fear of injury.

The operating mechanism is mounted on a column of 1½-in. steel pipe bolted to the floor in front of the press and tie rods connecting at the top of this column and securely fastened to the top or front of the press. Hand clamps connected to pull back cords are attached to the operator's wrists, these wristlets being provided with snaps so that they can be released quickly. The two pull back cords pass into the column through tubes supported on a bracket attached to the column. In the column they are connected, through tubes that slide up and down with the operation of the device, with a 3/16-in. flexible steel cable that in turn is attached to a rocker-arm, which operates on a saddle that is attached to the two tie rods. A tube connects the other end of the rocker-arm with either the ram or the operating screw of the press.

In operation, the ram on its downward stroke pulls down one end of the rocker-arm, and as the opposite end is raised the pull back cords are pulled upward and the operator's hands are drawn clear from the point of operation. The rocker arm is adjustable to any stroke or speed of the press by moving the saddle, which is adjustable, forward or backward on tie rods, in this way changing the speed and the amount of the pull back as required. An adjustment in the amount of the pull back from 1 to 11 in. can be made.

Another adjustment is provided in a screw in the rocker arm, by means of which the flexible steel cord is adjusted to regulate the operator's reach under the work. When this is properly adjusted, the operator's hands will be drawn clear of danger with the downward

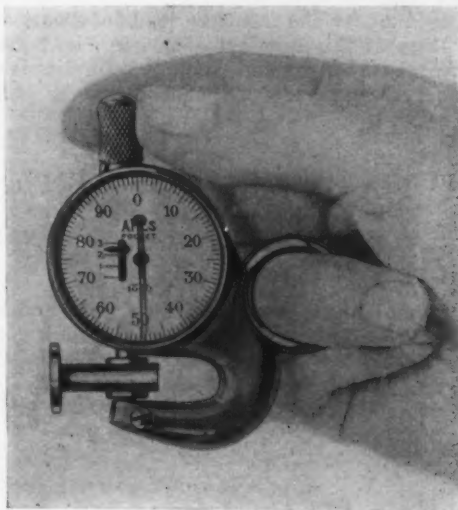
stroke of the press. This adjustment may be locked. Three-fourths of the pull back is effected with the first half of the downward stroke of the ram. The steel cable connecting with the rocker arm is kept in tension by a spring at the base of the column. The guard is provided with an operator's seat having a back rest, the seat being adjustable up and down and in and out.

The guard is said to be effective also should the press repeat. When the ram is up, the operator may reach to the floor or to an arm's length to each side, so that the attachments at his wrists do not interfere with the full movement of his hands. Ordinarily the operator will move his hands back from the danger point and will not feel the pull of the draw back, but if he does not draw his hands back quickly enough, they will be jerked back to safety.

Vest-Pocket Thickness Gage

A vest pocket thickness gage, arranged to read in thousandths of an inch, has been added to the line of the B. C. Ames Co., Waltham, Mass. The capacity is for measuring hard or soft materials up to 5/16 in. in thickness or diameter and accuracy of 0.0005 in. is guaranteed by the makers. The weight is 5 oz.

The dial face is 1½ in. in diameter. The frame is of solid bronze to prevent springing and causing false readings on the dial face, and it is finished in bright nickel. A ring is attached to the frame, as shown, through which a finger may be inserted to hold the gage while the thumb and forefinger are used to operate the knurled screw at top of spindle which opens and closes the jaws. The jaws are ⅜ in. in diameter,



The Capacity Is for Measuring Material up to 5/16 In. Thick. The large pointer records in thousandths of an inch

hardened and ground. The bottom jaw is adjustable in the frame to set the large pointer at zero on the dial face, but otherwise stationary; the top jaw is attached to the movable spindle which is operated by the knurled screw at top. The large pointer records thousandths of an inch on the dial, and the small pointer records the number of revolutions made by the large pointer. A dial at the back of the gage gives decimal equivalents for fractions. Unbreakable crystals are used to protect the front and rear dials.

The coke oven plant of the Hamilton-Otto Coke Co., Hamilton, Ohio, will be dismantled following its sale to Wolf & Co., scrap merchants. The plant has not been operated for a number of years. The Hamilton Furnace Co. is now building 50 Koppers ovens at its plant, and when these are completed, will, it is expected, supply the city of Hamilton with the greater part of its fuel gas and fuel coke, as the voters of the city at the recent election went on record against the sale of both the municipal light and gas plants.

Steady Business Improvement Expected

Washington Cheerful After the Election—General Congratulation on Account of Collapse of Gompers-La Follette Radicalism

BY L. W. MOFFETT

WASHINGTON, Nov. 11—The Republican victory at the election on Tuesday of last week developed two outstanding elements as they pertain to business. Through the election of President Coolidge and of Republican majorities in both the House and the Senate, assurance was given of economy in government and no wide sweep of meddling by the Government in business. These stimulating influences have come about as a result of the landslide under which LaFollette and his radical followers were buried. While there at no time had been any thought in serious minds that LaFollette had the remotest chance of being elected President, there plainly was apprehension that one of two things might happen. Up to the latter part of the campaign it was thought to be a possibility at least owing to the three-cornered contest, that the election might be thrown into Congress for decision, or that such a large vote would be polled by the third party that it would show not only a radical trend throughout the country, but would put into Congress an increased number of radical members, who easily would be able to prevent constructive legislation.

As the election turned out, however, it actually was a surprise, even on the part of those who did not take the LaFollette candidacy too seriously that it mustered such a small vote. The remarkably poor showing LaFollette made has been accepted not only as indicating an increasing rather than a decreasing sentiment of conservatism throughout the country, but as also exposing the utter failures of organized labor in active partisan politics. It is to be kept in mind that these things came about in the face of the largest popular vote ever cast at a national election, estimated at 30,000,000, divided approximately as follows: Coolidge, 17,000,000; Davis, 8,500,000, and LaFollette, 4,500,000.

The Federation in Politics

For the first time the American Federation of Labor committed itself as an organization to a party and its policies when it went on record in approval of the LaFollette candidacy, representing, as it did, varied socialistic doctrines, among them Government ownership of railroads. Some of the theories of LaFollette organized labor had in the past repudiated. The conversion of organized labor to the new policy is attributed to the vacillating leadership of President Samuel Gompers of the American Federation of Labor. It is well known that there are many in the ranks of organized labor who have become thoroughly out of harmony with the policies of Mr. Gompers and would like to see him dethroned as head of organized labor in America. The blunder he made in committing the federation to a discredited political party has, it is believed, further injured his standing as well as the standing of organized labor itself. But the election once more demonstrated the fact that organized labor votes as it chooses, despite the fact that it had formally gone on record politically. The LaFollette vote is ample evidence that organized labor was far from a unit in support of him. Even those most opposed to organized labor conceded that in the past it has shown wisdom in playing labor politics as distinguished

from partisan politics through legislative activities rather than by means of active support of a given political party. But this pillar of strength at least has been shattered for the time being and a great deal of interest is being manifested as to the attitude of the Administration and the majority of the new Congress, which comes into power after March 4, regarding organized labor, which had expressed its bitter hostility toward the Republican party. The belief is that the working majority, realizing that organized labor and the radical party could muster no great strength in the campaign, has no reason to expect and will not be granted any special legislative favors.

Farmers Not Deceived

The election also showed that the so-called discontent of the agricultural community was largely a myth. The heavy vote polled for President Coolidge and his party is looked upon as showing plainly that the rural districts had no faith in the visionary remedies suggested by LaFollette and his supporters but instead are determined to continue to insist upon what they consider a sensible legislative program and at the same time are aware of the fact that after all the chief reliance of agricultural interests, like that of business interest, is upon economic, and not upon man-made laws.

So far as business is concerned, observers in Washington altogether friendly toward the present Administration, look for improvement because of what they call the stabilizing effect of the election. At the same time they are indulging in no extravagant predictions as to what the better conditions will be. No so-called boom has been forecast, none is expected, and none is wanted. Instead, the hope is for a steady improvement so business through a healthy accretion will be built up to a prosperous condition in order that it may continue along an even line without abrupt changes one way or the other. To a large extent this is looked forward to by reason of natural laws, although there is no doubt that business is looking to the legislative program with a good deal of interest.

Tax Reduction Program

The Administration proposes to take up a tax reduction program which is expected to follow in the main the Mellon plan, if it is not an identical duplication of that plan, but it is seriously doubted that the program would be possible of enactment at the session of Congress beginning in December, which will be made up of the old membership.

This Congress defeated the Mellon plan by a rather large vote and apparently Administration officials believe that the plan again would be defeated if voted upon by the present membership of Congress. But after the new Congress comes into power with a small Republican working majority in both the House and the Senate, the Administration proposes actively to push a program of tax reduction, which, as an outstanding feature, will call for a cut in high surtaxes. It is believed that the election itself had the effect of a notification to some members of Congress, coming from

the different parties, including the Republican, Democratic and Progressive, who have been radically inclined, to manifest a more conservative attitude. This obviously will not be true of those who are out and out radical and make capital out of the fact, but it is believed that it is true of some so-called progressive Republicans and Democrats who in the past have formed coalitions with the radical group and have defeated constructive legislation. This theory may not work out in practice, but it is being expounded by so-called political observers. They think that this tendency in itself shows that the bloc system which has sprung up during the past few years will be much less vital in the new Congress, as a legislative force, than it has been. But as a matter of fact, the growth of the so-called progressive party with its radical views and the development of the blocs, it has been pointed out, together with the showing of their weakness when it came to actual test, and the promise of their virtual disappearance, is only a repetition of American history as manifested by past political organizations such as the Greenback and Populist parties.

Possible Changes in the Cabinet

The election of Mr. Coolidge obviously has created a great deal of discussion as to the make-up of the new Cabinet. When Mr. Coolidge was made President, he naturally committed himself to carry out the policies of the late President Harding. While not of a personal character, it is well known that the President has not been in agreement with policies of certain members of the Cabinet by whom he found himself surrounded, although when he took office he rejected their resignations and insisted upon their remaining in office. But with a free hand to select his own Cabinet after March 4, the opinion prevails here that there will be at least three changes in the Cabinet, involving the Labor, Interior and Post Office Departments.

While there is no indication that President Coolidge has definitely made up his mind as to who his new Cabinet members will be, there already has been a great deal of speculation on this subject. One interesting report, whatever its justification, is that John L. Lewis,

President of the United Mine Workers of America, will be named to succeed James J. Davis as Secretary of Labor. Mr. Lewis' aggressiveness in pushing strikes of coal miners manifestly is fresh in the minds of the public, but at the same time it is well known that he has also urged a degree of moderation among miners that the organization which he heads often did not reflect. The attitude of compromise when shown by Lewis frequently was attributed to advice that had been received from White House conferences under the administrations of Presidents Wilson, Harding and Coolidge. Mr. Lewis is understood to have supported President Coolidge during the recent campaign, although not actively.

This attitude of Mr. Lewis, despite the fact that the American Federation of Labor itself was supporting LaFollette, is understood to have aroused the enmity of other federation leaders. This would not be anything particularly new, according to reports, however, as Mr. Gompers and Mr. Lewis frequently are in disagreement as to policies and Mr. Lewis often has been mentioned as the probable successor to Mr. Gompers as head of the American Federation of Labor. But the occupancy by Mr. Lewis of the position as head of the Department of Labor would take on increased interest if it should turn out that organized labor as a body has resented his support of President Coolidge and might make his position as Secretary of Labor a rather difficult one when it comes to cooperating with organized labor. The other prospective Cabinet changes also have been mentioned with names of probable successors, but so far seem to lack any definiteness. Business interests of the country, however, were greatly interested in the announcement from the Treasury Department that, contrary to previous reports, Andrew W. Mellon would continue as Secretary of the Treasury if invited by President Coolidge to do so and it has been taken as a matter of course that his continuance in his present position will be requested by the President. The business interests also are hoping that Secretary of Commerce Hoover will agree to remain in office, but there are reports that he is anxious to retire from public service to private life.

FEW CELEBRATE

Armistice Day Not Generally Observed in Youngstown District

YOUNGSTOWN, Nov. 11.—Except for natural expansion this week in sheet mill schedules by Mahoning Valley makers, iron and steel production continues on much the same level as in preceding weeks. The Carnegie Steel Co., which has been holding back production in its blast furnace, steel-making and blooming mill departments, has decided to speed up to some extent. The puddle mill and rolling mill departments at the Girard works of the A. M. Byers Co., Pittsburgh, were inactive until Wednesday, on account of the Armistice Day observance.

Blast furnace schedules continue unchanged, with 21 of 45 stacks in the district pouring. It is likely, however, that the Carnegie company will start an idle blast furnace at Farrell, Pa., shortly, and that one or two other furnaces may resume before the end of the month.

Of 127 sheet mills in the Mahoning Valley, 84 were scheduled at the beginning of the week, a gain of 20 over the preceding week. The Mahoning Valley Steel Co. is operating five of eight mills at Niles, and the Falcon Steel Co. had seven of eight units scheduled. Both of these non-integrated sheet interests were idle last week.

The Republic Iron & Steel Co. is operating 12 of 18 sheet and jobbing mills at its Niles plant; the Newton

Steel Co., 10 of 20; the Waddell Steel Co. four and the Thomas Sheet Steel Co. six.

Independent bar mill production shows a recession from recent weeks, though makers at Chicago are reported to have booked sizable tonnages.

The new eight-mill sheet plant of the Sheet & Tube company has not yet gotten under way, and is now scheduled for initial rolling on Nov. 17.

Independent steel ingot production shows little change, with 31 of 52 independent open-hearth furnaces melting and 23 of 30 units of the Steel Corporation subsidiaries. At Farrell, Pa., the Carnegie Steel Co. is operating nine open-hearths, its best schedule in a long time.

Average production of the Sheet & Tube company in the Youngstown district is placed at 65 per cent this week; the Republic Iron & Steel Co., 60 per cent; Sharon Steel Hoop Co., 90 per cent, and the Trumbull Steel Co. at 80 per cent.

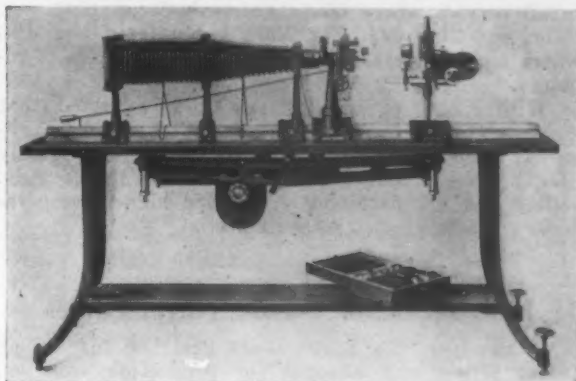
Tube mill operations continue the same, with 12 of 17 mills rolling, but skelp production is being enlarged, in anticipation of broader output by pipe furnaces.

Ralph E. Lundgren, formerly resident vice-president at Chicago of the Matthew-Addy Co., and John G. Stevens, formerly of the Chicago sales force of that organization, have formed the Lundgren-Stevens Co., with headquarters at 1045 Peoples Gas Building, Chicago, for the sale of pig iron, coke, iron ore, alloys, fluorspar and coal.

Improves Metallographic Equipment

Improvements made in the "Micro-Metallograph" of E. Leitz, Inc., 60 East Tenth Street, New York, pertain to the microscope, the illuminating system, camera and the device for photographing of large specimens. The improved equipment is designated as the model 1924.

In the microscope coarse adjustment has been provided by means of rack and pinion, and is mounted independently of the micrometer fine adjustment screw. The coarse focussing arrangement acts upon the object stage, upon which comparatively large and heavy specimens may be placed without interfering with the sharp focus. When the coarse focus is obtained, the rack and pinion may be locked, and the final focus made by means of the micrometer screw. The fine adjustment



"Micro-Metallograph" With New Features. Improvements pertain to microscope, camera and other components

acts directly upon the objective, and is independent of the specimen support.

The vertical illuminator of the improved apparatus has the total reflecting prism and the reflecting glass plate mounted on a rod. As this rod is inserted or withdrawn it serves to bring the total reflecting prism on the glass plate within the optical rays. The horizontal tube of the vertical illuminator is provided with an iris diaphragm to stimulate the illuminating rays to the proper contrast, an illuminating lens in focusable mounting, being provided also to assist further in this. An arrangement for oblique illumination is made up of an iris diaphragm mounted on a rack and pinion device supported by a rider, which permits of swinging the arrangement aside when not in use.

The conical stop illumination arrangement incorporated consists of five adapters with central stops of varying diameter. The adapters or stops slide into a horizontal tube. The use of the stops is said to permit the specimens to be viewed or photographed under more natural conditions and with clearer insight into structural relationship.

Improvements in the illuminating system include the Collimator lens system. This is attached to the source of light and has been calculated to provide even and powerful light rays sufficient for the highest magnifications. Photographs with unusually large area of flatness and with maximum definition of details are said to be obtained by the system. A Mazda lamp, provided with a solid strip of tungsten, is employed in the improved apparatus.

The camera has been provided with an indirect observation arrangement, consisting of a suitable prism, which is mounted in back of the camera lens board. The shutter of the observation window is controlled by a spring release, and, when opened, the entire size of the projected image can be viewed through the window. This indirect observation method is intended to serve to control the coarse focus of the image, and its proper illumination. It also facilitates searching of the specimen for important details. A focussing extension cabinet equipped with a telescope loupe can be provided. With this attachment and the indirect observa-

tion arrangement it is unnecessary for the operator to view the focussing screen at the back of the camera, the observer remaining in his position at the side at which the microscope is manipulated.

An illuminating device and holder for macro-specimens is an added feature.

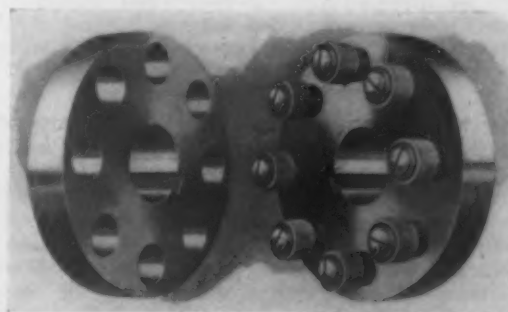
New Flexible Coupling

A flexible coupling of the pin-and-bushing type, for use with steam turbines, motors and generators, pumps and other equipment, has been placed on the market by the Terry Steam Turbine Co., Hartford. The couplings are available in capacities up to 400 hp. per 100 r.p.m.

The flanges are machined all over and are of special composition steel forgings, steel being used in preference to cast iron because of its greater uniformity and higher tensile strength. The cylindrical portion of the pins, which are of steel, are hardened and ground, and the bushings are free to adjust themselves under load and are prevented from transmitting end thrust. The pins are provided with screw heads and fibre washers which keep the bushings in their proper location within the driven flange, but the pins may be removed readily with an ordinary wrench if necessary. The bushings, which are the flexible medium, are of rubber. They are fastened securely to flanged steel spools, which protect the ends and inner surface from wear. The rubber is ground to an exact outside diameter, so that each bushing transmits its portion of the load. The bushings cannot work into the space between the flanges, and they cannot become enlarged or transmit axial motion.

All parts of the coupling are made to limit gauges, to assure accuracy and interchangeability, and bushings may be replaced conveniently without fitting. Accurate jigs are employed in drilling and reaming the holes in the flanges, so that the pins are equally spaced and parallel to the axis of rotation. The coupling is balanced after it has been finish machined. This prevents setting up of vibration by the coupling, which would lead to wear and rapid deterioration of the connected apparatus.

Among the advantages claimed for the coupling is that it compensates for both angular and off-center



Flexible Coupling With Flanges Separated. Faces are machined to facilitate checking alignment

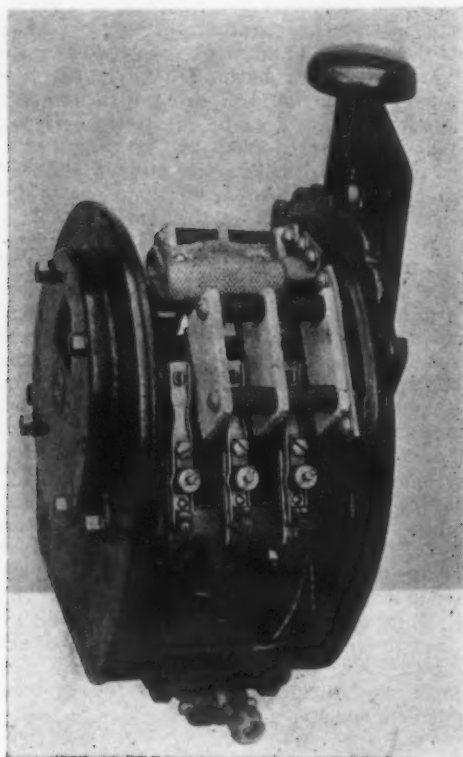
misalignment, permits free end float of the connected shafts and will not transmit end thrusts. Special tools are not required to disconnect it, and by removing the pins the shaft of either machine may be raised vertically without disturbing the other. The coupling may be quickly checked for alignment. The driving flange is provided with a lip to protect operators. Lubrication is not required.

A new handbook has recently been issued by the Central Steel Co., Massillon, Ohio, describing its various alloy steels. It contains a number of tables of data of considerable interest to metallurgists and engineers, and is illustrated by charts and other illustrations.

New Inductive Time-Limit Starter

To meet the requirements of uniform periods of acceleration of motors employed in driving auxiliary machines in steel mills, the Cutler-Hammer Mfg. Co., Milwaukee, has developed the controller shown in the accompanying illustration.

Dash pots and other mechanical and electro-mechanical means of timing the acceleration are not employed, the inductive principle being utilized instead. A transformer is employed in place of relays, interlocks, dashpots or other moving parts to control the time of acceleration. The construction of the con-



Master for Inductive Time Limit Starter
With Cover Removed

troller is simple, and there are no moving parts other than the reversing switches, main magnetic switches and the accelerating switches.

By means of a transformer a holding-out current of transient nature is obtained in successive accelerating switches. Transfer of connections takes place automatically with the cutting out of successive steps of resistance without disconnection of the coil circuits. Adjustments for the timing of the acceleration are made on the stationary parts and are permanent. The acceleration period is said to be uniform under ordinary conditions of load variations, the time being somewhat increased on heavy loads.

Two types of the starters are available, one for reversing table service and one for applications where the motor is liable to stall, as on screw downs and side guard manipulators. For the latter service a jamming relay is added.

The General Electric Co., Schenectady, has appropriated \$25,000 for a Steinmetz memorial fund for Union College in memory of Dr. Charles P. Steinmetz, the company's chief consulting engineer, who died a year ago. President Charles A. Richmond of Union College has announced. The income from this fund will be used to provide four scholarships annually and are open to students in the arts courses as well as electrical engineering.

Largest Nickel-Chromium Plate

A "Nichrome" plate or sheet, 128 in. long, 57 in. wide and $\frac{3}{8}$ in. thick, and weighing approximately 1000 lb., made recently by the Driver-Harris Co., Harrison, N. J., is said to be the largest plate of an alloy containing a high percentage of nickel and chromium yet produced.

In view of the early difficulties of producing resistance wire and strip of this alloy, the production of a plate of this size is regarded as of commercial importance. There has long been a demand for large sheets, or plates, of high nickel-chromium alloy, but early attempts were so discouraging and expensive that effort to accomplish these results were abandoned. Plates of this size are pointed to as of value in the manufacture of certain containers and furnace parts and, when perforated, as screens for use in chemical sifting and ore roasting apparatus. They may be used in all service where temperatures between 1700 deg. Fahr. and 2200 deg. Fahr. are encountered and also where high temperature and chemical resistance is required.

With billets of suitable size it is expected that longer plates of the same alloy may be as easily produced. The method of manufacture is that usually used in sheet production, except that in the forging, rolling and hot flattening operations higher temperatures must be applied to the material.

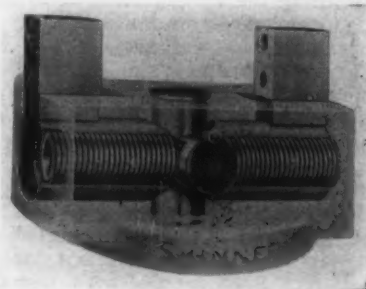
New Chuck for Use on Turret Lathes

A two-jaw "box body" chuck designed for use on turret lathes and adapted for production work on odd-shaped pieces, has been placed on the market by the Skinner Chuck Co., New Britain, Conn.

The construction may be noted from the accompanying phantom view. The hole through the center of the body is for the use of a pilot bushing or to permit of work passing through the chuck. Bridged construction of the face of the chuck at the center is intended to prevent springing. The construction of the jaw, the bearing parts of which are of cylindrical form as illustrated, is a feature. The front end of the cylindrical portion is held down, as that end of the jaw is always covered by the bridged construction of the chuck body, which is said to hold the jaw rigidly in position and eliminate tendency to become bell-mouthed. The jaw screw is flush with the body which eliminates the danger present when there are projecting parts.

The chuck is available in 7½- and 9-in. sizes. It

Chuck for Turret Lathes and Production Work on Odd-Shaped Pieces. The construction of the jaws is a feature



is attached to the machine on which it is used by means of a face plate or an adapter plate. The body is of gray iron and the jaws and screw are of nickel-chrome steel, heat-treated, hardened and ground. The bearings are of alloy steel, ground, and "force fitted."

A McKee revolving distributor of the latest design and equipped with a worm drive mechanism, will be erected on the No. 2 blast furnace of the National Tube Co., Benwood, W. Va. The contract for the distributor has been placed with Arthur G. McKee & Co., Cleveland.

Judge Gary Tells About Stinnes Interview

Was Powerless to Act Unless Steel Manufacturers of All Countries Could Work in Harmony—Recent Talk About an International Meeting

JUDGE ELBERT H. GARY, chairman United States Steel Corporation, in an extended interview granted Miss Rose C. Feld of the *New York Times*, tells of the effort which was made in 1911 to form an international organization of steel manufacturers, when he called a meeting of leading representatives of the industry in the United States, Great Britain, Canada, Belgium, France, Italy, Spain, Austria, Hungary, Germany and Russia. The meetings were held on July 5 and 6 at Brussels. In closing his speech as chairman of that meeting Judge Gary said:

"Many of those who are here will live to see the day when war is a thing of the past, when every nation will adopt the sentiment that right makes might. When all will be disposed to live and let live, is it saying too much to express the hope that representatives of the steel industry throughout the world, acting in harmony and presenting an undivided front, may be of use in assisting to bring about universal peace?"

When asked by the interviewer why subsequently other meetings were not called, he said that following the Brussels meeting the dissolution suit was brought against the Steel Corporation. "There was too much to do to answer that charge," said Judge Gary, "to think of outside organization. We weren't sure we would be permitted to exist. What right had we, then, to try to weld foreign elements together when it was questioned we had any right to act as the head of a domestic corporation? No, you can't construct outside of your province before you are certain that your own foundations are sound. It wasn't until 1920 that the Supreme Court made a decision in our favor. In the meantime the great war had started, enmities were born and the time for calling such a meeting has not since been propitious."

Might Have Prevented World War

Continuing, Judge Gary said that if the organization had been perfected it might have prevented the world war. He added:

"That's a big statement. There is an erroneous conception in the minds of many men that capital fostered this war, battered on it. In answer to that let me say that the men gathered in the conference at Brussels were not inspired with thoughts of war. I believed then that war was a thing of the past, that I should never see another. I had no hesitancy in saying that. And I have no hesitancy in saying today that if the leaders of the steel industry had been permitted to come together year after year, had grown to know each other in friendly business relationship, they could have done much to bring men to reason. Munitions are made out of steel and they could have refused to manufacture them. It need never have come to that. They could have convinced the political leaders of the country that harmony could be maintained through friendly intercourse. Even in October, 1914, if the question had been left to the steel people, there would have been no further continuance of the war."

The Interview with Stinnes

Coming down to more recent events, Judge Gary was asked why, if he believed in cooperation and harmony, he refused to grant the request of Hugo Stinnes for an interview in Rome in 1923. He replied:

"I never refused to see Hugo Stinnes. That is the truth. I saw Hugo Stinnes in Rome on March 25. We had an interesting talk. Although I do not wish to be quoted on what happened there, you can get the facts from an authoritative source."

The interviewer states that she found authoritative source and she continues the narrative as follows:

What Stinnes Wanted

On that day the meeting was held. Stinnes, remembering the great interest the Judge had shown in international industrial harmony, asked his help on a serious German industrial problem. France, he said, had taken the iron ore fields away from Germany. Germany had plenty of coal but had no ore with which to make steel. France, on the other hand, had all the ore but suffered from dearth of coal and therefore she could not make steel. It would be much to the benefit of both countries, he asserted, if an arrangement could be made whereby France could get the coal of which Germany had an abundance and Germany could get the ore of which France had a superfluity.

His belief was that Judge Gary could help bring order out of this unhappy situation both by his personal influence as an industrial leader of a neutral interest and by once again calling a meeting of international steel men. This would entail injury to none and might accomplish the great task of peace at which others had failed.

Gary's Statement to Stinnes

Judge Gary frankly told Herr Stinnes that he was not unaware of the great influence for good the calling of such a conference would be, but felt that he was powerless to act until he could ascertain that all manufacturers of steel in all countries were willing to overlook what had happened in the past few years and were ready to come together to work in harmony in the future. Several requests for the calling of such a conference had indeed been submitted to him, but they were not yet of sufficient strength to warrant any movement in that direction. Nevertheless, he promised Herr Stinnes to see what could be done about his own individual problem. Proper inquiries were made and it was unfortunately discovered that enmities were still too great for any constructive action. That, in brief, is the story of the Stinnes interview.

Other Efforts

Judge Gary was asked whether since that time any effort had been made to interest him in once again calling an international meeting.

"Yes," he answered. "Up to a recent date I have been approached a number of times by various delegations who have asked me to take the initial step in bringing about an international gathering of steel men. I have had to refuse consistently. Unless all men come and all enmities are broken down there would be little purpose in such a conference. I should like to see an international group succeed in doing what our American Iron and Steel Institute is doing in the United States, breaking down all barriers of hate and creating a forum for open, friendly and scientific discussion. In no way would it or could it properly be an organization for the restraint of trade."

The interviewer asked the judge how any international combine could possibly restrain the trade of American producers.

Trade Restraints

"We'll take a hypothetical case," he said. "During a certain period, let us say, the producing capacity of all steel makers might be double the demand. That would mean that we should have a surplus of production. In a fair and open market this would lead to close competition and, perhaps, an unreasonable de-

crease of prices. A combine, however, organized to control the market, would see to it that there was no surplus and consequently no decrease in profits and prices. The representatives at such a conference would agree to divide the business of the world and charge prices that would compensate them for running at half capacity. In a word, they would double the price to the consumer in order to get the same profits which running at capacity would give them. Each member of the group would get a fair proportion of the entire business and would manufacture only the amount allotted to him. This is what is meant by restraint of trade, the fixing of prices, the division of territory. Such an organization we could never enter. You can see it would be unfair to purchasers. I cannot be too definite about that.

May Be Sounding Opinions

"I am reasonably certain, however, that this is not what is being contemplated. It may be that steel men on the other side have been getting together to sound opinions and attitudes before they suggest again the calling of a new conference, based on the international meeting of 1911 at Brussels. If it has gone further than that, I have no knowledge or information concerning it.

"Manifestly the citizens of this country could not legally become a party to any combination which was calculated to control any line of business, international or otherwise, which would in any respect restrain open and competitive trade conditions. There would be no inclination on the part of America to attempt anything which might be considered as a violation of the principles of any of our laws. I should not do anything without the knowledge and approval of the Department of Justice. At the same time I do not hesitate to say Americans entertain a very friendly sentiment toward all foreign manufacturers. We should be willing to cooperate with them to the full extent of propriety and legality."

Struthers Furnace Co. Unable to Meet Interest Obligations

Financial difficulties encountered by the Struthers Furnace Co., with principal offices in New York, have obliged it to notify bondholders that it will be unable to meet interest obligations due Nov. 1 and will take advantage of a 30-day grace clause. It has \$1,500,000 of bonds outstanding. The company operates a merchant blast furnace at Struthers, in Mahoning County, and controls 33 acres of valuable industrial land adjacent to the property of the Youngstown Sheet & Tube Co. The company's stock is in good condition, and there have been reports that its property may be absorbed by one of the interests in the Youngstown district, provided the company is unable to overcome its financial difficulties.

In 1920 the Struthers Furnace Co. paid dividends of 14 per cent on its common stock, but has since met difficulties and financial reverses because of the backward and unsatisfactory state of the iron market. Its losses in the past few years are said to have aggregated \$1,500,000, compelling it to issue bonds. The offices were formerly located in Cleveland.

Zinc Smelting and Refining

Reports from 35 establishments engaged in the smelting and refining of zinc in 1923 show products to the amount of \$94,183,900, an increase of 151 per cent over the \$37,482,675 produced by 29 establishments in 1921, according to figures of the Census Bureau. The number of wage earners was more than doubled, from 5778 to 11,918. Their wages went up in still greater ratio, from \$7,243,760 to \$16,895,864. The horsepower used in 1923 was 69,583 and the coal consumed 2,004,537 net tons. Nine establishments in 1923 were located in Oklahoma, eight in Illinois and the remaining eighteen in eight other States.

Conservative Policy as to Demanding Refunds from Steel Companies

WASHINGTON, Nov. 11.—Indications increase that the Government will not seek extensive refunds from the steel industry on account of prices paid for war material. Reports were current that some departments were considering the idea of asking for refunds representing the difference between prices fixed on Pittsburgh base and the present method of quoting adopted subsequent to the Federal Trade Commission's "cease and desist" order.

It now appears that refunds being asked relate only to special features of a few war contracts for material which was not completely shipped at the time war activities ceased. The refunds which have been sought are understood to involve comparatively small amounts.

Baldwins Corporation May Reorganize Ashbridges Bay Plant

It is reported that the Baldwins Canadian Steel Corporation will reopen and operate its plant in the Ashbridges Bay Industrial District, Toronto, Ont. Sir Hugh Poynter, the Toronto representative of the British concern, who has been negotiating with large financial interests for some time with the object of arranging for the reorganization of the local corporation, has received word that Sir Charles Wright, managing director of the parent company, left England Nov. 5, to take part in *pour parlers* that are expected to lead to the reorganization of the Toronto company.

Sir Hugh Poynter will meet Sir Charles Wright in New York, where it is probable that a preliminary conference will be held, followed by another in Montreal, Que., which, if successful, as is confidently expected these conferences will be, will cause control of the Toronto plant to be evenly divided between English and Canadian interests. Sir Hugh Poynter stated further that the local plant will resume operations as soon as possible, but considerable rehabilitation work would be necessary before operating could be resumed. This work will be carried out during the winter months so that everything will be in readiness for opening the plant in the spring. Plates will be manufactured in Toronto and possibly other metal products, providing employment for upward of 500 men. It is probable that the city will be again requested to do its share in assisting the reopening of the plant by granting a fixed assessment for a number of years. The plant has an estimated capacity of 100,000 tons of steel ingots and castings.

It is further stated that Baldwins, Ltd., of England, will establish a plant in Montreal, Que., for the purpose of supplying the Canadian trade with galvanized sheets direct. This announcement has been confirmed by John C. Newman, manager of the Montreal headquarters of the McClary Mfg. Co., a portion of whose Montreal plant is to be acquired for the purpose. The plant will be operated by a Canadian subsidiary to be known as Baldwins, Montreal, Ltd. Sir Charles Wright will also take up this matter when he arrives in Canada.

Electric Steel and Spiegeleisen Standard Samples

The U. S. Bureau of Standards is now ready to issue standard samples of acid electric steel and spiegeleisen with provisional certificates. Sample No. 65, acid electric steel, has the composition: Carbon, 0.24; manganese, 0.75; phosphorus, 0.02; sulphur, 0.04; silicon, 0.42; and costs \$2 per 150 grams. Sample No. 66, spiegeleisen, has the composition: Manganese, 19.92; carbon, 4.07; phosphorus, 0.06; sulphur, 0.016; silicon, 2.22 per cent, and costs \$2 per 100 grams. Samples may be paid for, by check payable to the Bureau of Standards, in advance with order or will be sent by parcel post C. O. D.

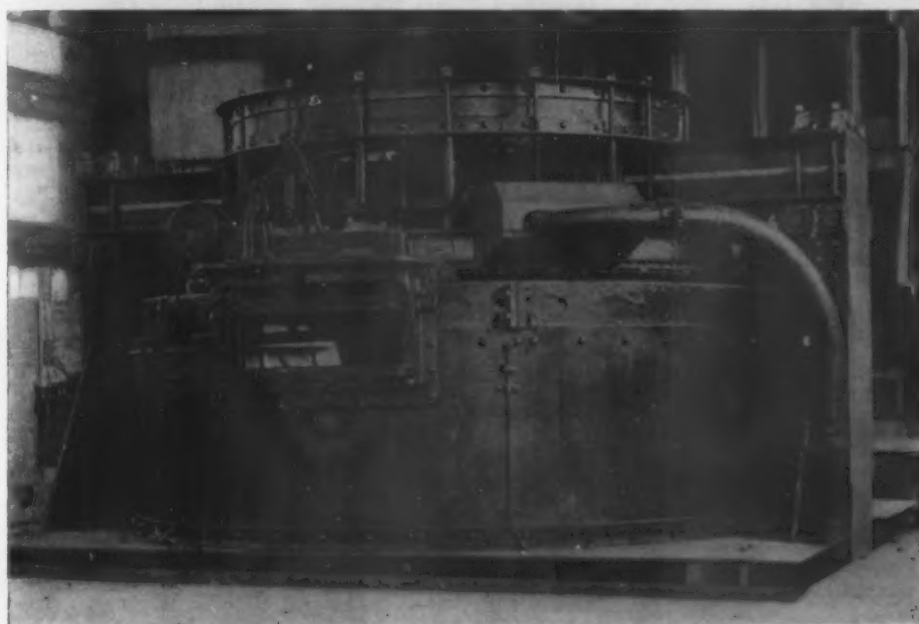
Horizontal Ring Induction Furnaces

Comparison with Electric Arc Furnaces for Metals— Attractive Features of Induction Melting —Results from a 6-Ton Unit

BY J. A. SEEDE*

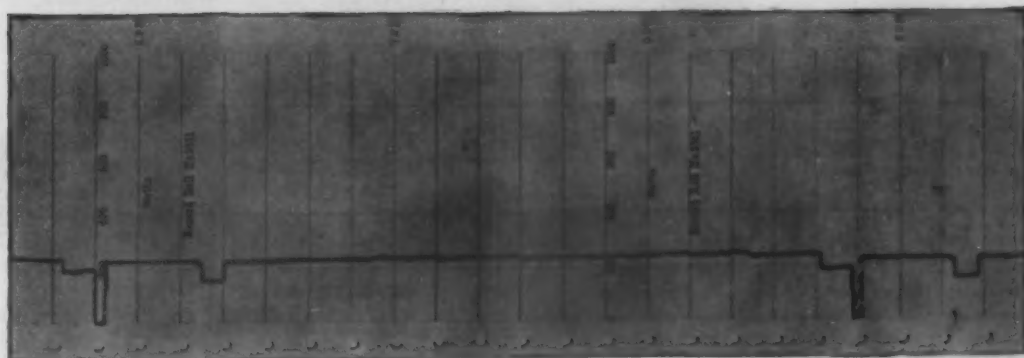
IN the two generally accepted methods of melting metals and alloys above 1500 deg. C., the arc and induction furnaces are used. In the arc type, the heat is generated at the surface of the metal by the arcing of the current from the carbon or graphite electrodes to the metal. In the induction type, however, the heat is generated by the resistance of the metal to the induced current. In the arc type, much of the heat is radiated from the arc and reflected from the metal

On the other hand, the hearth of the arc furnace has a longer life than that of the induction furnace, the latter being subjected to a higher average heat and more erosion, due to the circulation of the metal. The induction furnace is fundamentally adapted to continuous operation and, when once started, must be kept in operation; that is, with a molten metal charge, until shut down for relining. Whether operated on a 24-hr. basis or not, the furnace is always at operating tem-



A 6-Ton Induction Furnace Installed at the Brackenridge, Pa., Plant of the Allegheny Steel Co. It has been in operation nearly one year

Sample of Load Curve of a 2-Ton Induction Furnace



and slag to the roof and side walls, the hottest metal being at the top and the coldest at the bottom. This is exactly contrary to the most desirable method of obtaining circulation.

Induction and Arc Furnaces Compared

In the induction type furnaces, the metal is evenly heated throughout and radiation is so cut off by the slag that the roof receives very little heat and lasts indefinitely. This is in direct contrast to the arc furnace, where the roof receives entirely too much heat and usually lasts from 75 to 125 heats.

*General Electric Co., Schenectady, N. Y.

perature and, therefore, is not subject to delays ordinarily experienced when starting a cold furnace.

In making alloys having a wide difference in specific gravity between the various elements, there is likely to be segregation in the arc furnace, while in the induction furnace the positive circulation thoroughly mixes the constituents and segregation can only take place when the metal is held too long in the ladle.

As the electrodes must be moved frequently in the automatic control of power input to the arc furnace, it is practically impossible to keep the joints around the electrodes tight. These, therefore, cannot fail to admit certain quantities of air, especially with a large air

space above the metal. This means a certain amount of oxidation of alloys will occur during melting down, together with oxidation of electrodes, thus adding to the melting cost. The air space above the metal in the induction furnace is much smaller and, as the roof is solid, it is much easier to keep out the air.

Metal is melted in the induction furnace under the most favorable conditions, not only from the oxidation and gas reaction standpoint, but also due to the fact that there are no foreign elements from other sources, such as impurities in the electrodes, from the superheated roof, etc. Carbon-free metals are melted without trouble and other difficult metallurgical problems can be more readily solved than in other furnaces.

Various sizes of "figure-8," single-phase, induction furnaces have been built and operated in this country,

for structural steel can be made as cheaply by preliminary melting in the open-hearth, and finishing in the large induction furnaces, as by completing the process in the open-hearth furnace. The induction furnace process means extra handling of the molten metal, but the metal will obviously be of higher quality.

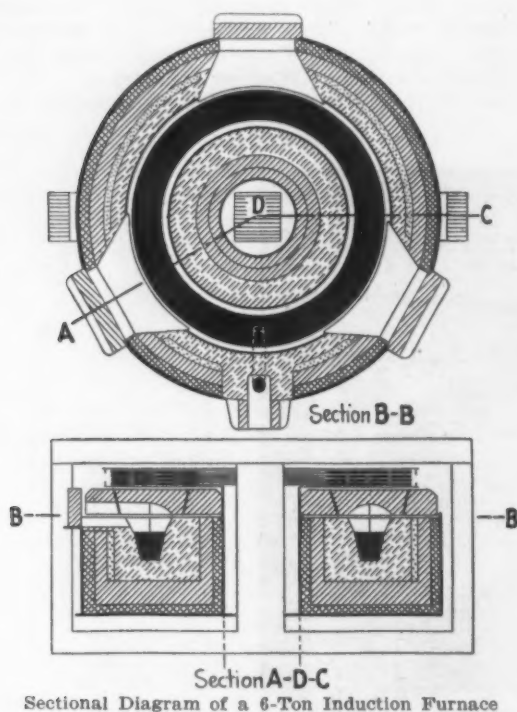
While the furnace load itself is single phase and low power factor, this is not objectionable as a motor generator set must be used to supply power to the larger furnaces and as a synchronous motor is almost always used to drive the generator. The line load is thus a balanced, 3-phase, high power factor load which may be made leading for power factor compensation. The load from the furnace is very steady, almost never changing except at the will of the operator. As such, it is highly desirable.

The Induction Furnace at Allegheny

The largest horizontal, ring type induction furnace now operating in this country is the equipment at the Allegheny Steel Co., Brackenridge, Pa. This has a holding capacity of 6 tons and has been in continuous successful operation for nearly one year. It is rated 800 kw. and is operating from a motor generator set, taking power from a 25,000-volt, 3-phase, 60-cycle circuit through a 25,000/2300 volt, 3-phase transformer bank.

Every four hours a 3½-ton heat of high-grade steel is poured whose value is greatly enhanced by its high uniformity. Measured at the terminals of the 25,000-volt power line, the over-all average energy consumption approximated 800 kw. hr. per ton, but, as much lower figures have been obtained for individual heats, undoubtedly, with more operating experience, the figure of 800 kw. hr. per ton will be reduced.

The success of the Allegheny furnace is another important step in the progress of the horizontal ring type of induction furnace. The increase both in numbers and capacity has been slow, but a total of 6 furnaces, ranging in capacity from ¼ ton to 6 tons, are all melting special alloys successfully in this country.



ranging from small laboratory furnaces to furnaces of 20 tons capacity, the larger furnaces especially not being commercially successful. Practically all failures have been due to lining troubles and, whether or not this condition can be traced directly to the figure-8 crucible shape, position of exciting or primary coil, or lack of refractory knowledge, the fact remains that the present design, with circular hearth and coil above the metal, is giving much better results.

Features of Induction Furnace

The induction furnace has several attractive features not found elsewhere. In melting metal, it is obviously better to develop heat in the metal or below it, rather than at the top, and this feature, together with continuous positive circulation, insures thorough mixing and prevents segregation. The self attraction which results in pinch effect when the current is too high and repulsion between the metal and exciting coil, is an active agent in freeing the metal from gas and slag.

In the earlier induction furnaces where the coil was between the core and the metal, too violent circulation resulted. This was probably a factor in cutting the lining with resultant short life. By putting a horizontal coil above the metal, the circulation has been brought under better control and it has enabled the channel to have a more desirable cross section; that is, it is shallower and broader. Such a cross section should allow easier repairs and permit the furnace to be kept in service over long campaigns.

This might bring about the successful demonstration of Otto Frick's statement to the effect that metal

Local Engineering Meetings

Section meetings of the American Society of Mechanical Engineers in November include the following:

At Birmingham, Nov. 18, at 8 p. m., in the Masonic Auditorium. Topic: Mobilization of Industry for Peace. Speakers, Major-General C. C. Williams, chief of ordnance, and Brigadier-General C. L'H. Ruggles, assistant chief of ordnance, United States Army.

At the Milwaukee Athletic Club, Milwaukee, at 8 p. m., Nov. 19. Subject: Diesel Engines. Speaker, B. V. Nordberg, executive engineer Nordberg Mfg. Co., Milwaukee.

At Engineering Societies Building, New York, Nov. 20. Subject: World Power Conference in England in 1924. The speakers will be representatives of each of the four national societies—Mechanical Engineers, Civil Engineers, Electrical Engineers and Mining Engineers.

At the Mason Laboratory, New Haven, Conn., at 8 p. m., Nov. 25. Subject: Today's Transportation Problems. Speaker, Robert H. Newcomb, New York, New Haven & Hartford Railroad.

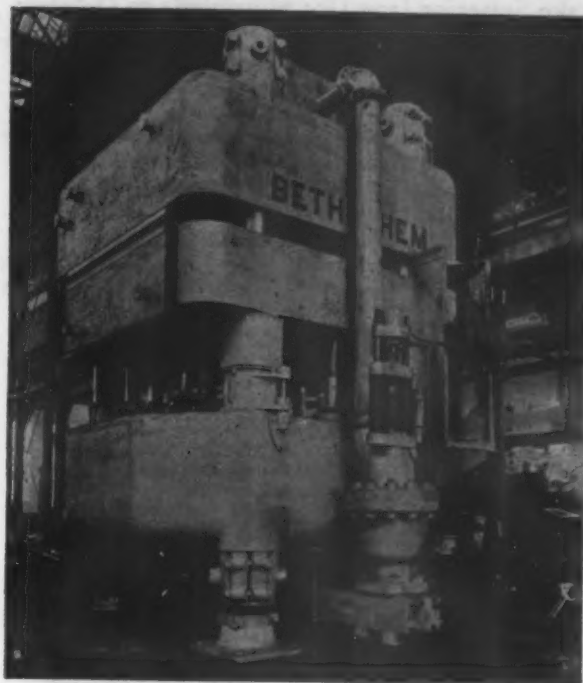
At Lehigh University, Bethlehem, Pa., at 8 p. m., Nov. 28, joint meeting with Mohawk Valley Engineers Club. Subject: Pulverized Fuel, with special reference to its application to industrial work other than under boilers. Speakers, H. G. Barnhurst, chief engineer Fuller Engineering Co., and C. H. Frick, Pennsylvania Power & Light Co.

Examinations will be held for associate ordnance engineers to fill vacancies in the ordnance department at large, Picatinny Arsenal, Dover, N. J., and for similar positions, entrance salaries ranging from \$3,000 to \$3,600 a year. Duties shall consist of developing improvements and conducting experimental tests. Applications will be received until Dec. 16 by the United States Civil Service Commission, Washington.

Hydraulic Press for Accurate Work

A 3000-ton hydraulic press, recently designed by the Bethlehem Steel Co., Bethlehem, Pa., for use in the manufacture of pulp millboards, is of interest not only because of improved features incorporated, but also because of the accuracy of the work which a press of its size is required to produce.

An important requirement is that the finished product shall have the same thickness all over. Al-



Improved Design and Accuracy of Work Produced Are Features

though the working surfaces of the press are 10 ft. wide by 15 ft. long, the maximum deflection permissible under a full load, which is uniformly distributed, must not exceed 0.01 in.

The new features of design are emphasized as representing advanced practice. Maximum economy in the use of high pressure water is provided for by the use of auxiliary lifting cylinders in combination with a slack water tank on the top of the press. The pressure water is used in the main cylinder of the press only during the actual working part of the stroke. The control valves and manifolds are attached to the press so that the whole forms one self-contained unit supported on lifting nuts, providing sensitive adjustment to take care of possible settling of foundations. Speed of operation is obtained by the use of extra large pipe connections between the valves and main cylinders of the press, these connections being bored out from solid forgings. The press is operated with water at 3000 lb. per sq. in. pressure.

A New Permeameter

A bulletin has recently been issued describing a new simplex permeameter which has been perfected by Frank P. Fahy, 50 Church Street, New York. It is described as having several unique features adapted to resistant and research magnetic testing, not only for electrotechnical purposes but to a like degree in magnetic analysis. Because it was appreciated that a simple instrument for getting at the fundamental magnetic data would assist in speeding up magnetic analysis, a large amount of work has been done in developing this new instrument.

The United States Steel Corporation has donated \$375,000 for a Y. M. C. A. building at South Chicago, Ill., provided a total of \$600,000 is raised for the purpose.

Youngstown Company Advances Quotations on Pig Iron

YOUNGSTOWN, Nov. 11.—In consequence of the accelerated movement in the pig iron market, firmer prices prevail. The Sheet & Tube company has advanced iron prices uniformly 50c. per ton, at both Chicago and Youngstown. At Chicago, the company marked up basic iron from \$20 to \$20.50 per ton and No. 2 foundry from \$20.50 to \$21. The current prices at Youngstown furnaces are \$19.50 for basic and \$20 for foundry, or \$1 per ton less than the Chicago quotations.

The Republic Iron & Steel Co. also shared liberally in the iron business placed since the election, and is reported to have booked one order from a Virginia pipe maker involving 5000 tons of its "Pioneer" brand iron.

The Sharon Steel Hoop Co. has been a recent purchaser of iron, and is reported to have contracted for 2000 tons at \$19, this business having been placed just prior to the election.

Activity in the pig iron market, which started shortly before the election, was undoubtedly stimulated by the election result. The Sheet & Tube company, for instance, has booked, since Nov. 4, over 25,000 tons of basic and foundry iron for shipment from its blast furnaces at Youngstown, East Youngstown and Hubbard, and participated generously in an aggregate of 100,000 tons of iron placed in the Chicago district. In the latter instance, of course, the iron will be shipped from the company's stacks in the Chicago area.

May Be Wage Readjustments to Meet Foreign Competition

YOUNGSTOWN, Nov. 11.—A statement last week by James A. Campbell to the effect that iron and steel production costs may be subject to further liquidation, in order that this country may compete more effectively in the world markets, has created considerable discussion. Inasmuch as a determined effort has been made to introduce the most efficient methods in production from a mechanical standpoint, Mr. Campbell's views are interpreted in some circles as indicating a probable wage revision downward, such a course offering the most direct means of cutting costs.

Whether the election result will act as a deterrent to suggested independent steel mergers is a matter of speculation. It is certain there will be less incentive for amalgamations if business is good and earnings are satisfactory, than if the opposite were true. The full effects of the abandonment of Pittsburgh basing have not as yet been fully ascertained by the industry, and it is felt here this will be a consideration of the first importance in merger negotiations.

Luxemburg Iron and Steel Output

LUXEMBURG, Oct. 24.—The number of blast furnaces active in the Grand Duchy on Sept. 30 was 34: Arbed, all 6 at Esch s. Alz., all 6 at Dudelange and 2 of the 3 at Dommeldange; Terres Rouges, all 6 at Belval, with Esch closed down; Hadir, 8 of the 10 at Differdange, with Rumelange closed down; Rodange, 4 out of 5; Steinfort, 2 out of 3.

Iron and steel production of Luxemburg in September involved pig iron: foundry iron, 4715 metric tons; forge iron, 75 tons; basic iron, 172,258 metric tons; total, 177,048 tons. Steel: basic steel, 155,994 tons; open-hearth steel, 1841 tons; electric steel, 408 tons; total, 158,243 tons.

The Colorado Fuel & Iron Co., Denver, has inaugurated a four-year program for the modernizing and reequipment of its Minnequa steel works, Pueblo, Colo. Plans include the motorization of a number of steam-driven mills. The entire work is expected to cost approximately \$15,000,000.

New 26 and 30 Inch Engine Lathes

An engine lathe known as the Super-Production lathe, and available in two sizes, 26- and 30-in. swing, has been placed on the market by the Monarch Machine Tool Co., Sidney, Ohio. The machine is intended for heavy turning on steel bars and forgings from 12 to 16 in. in diameter, which work it is claimed can be done with greater ease than on larger lathes which have been commonly used for such work.

The machine may be equipped with either cone or geared head. The gears in the headstock are of chrome-nickel steel heat-treated forgings. Auxiliary shafts in the headstock are mounted in double row ball bearings and the spindle end thrust is taken against a heavy ball thrust bearing. Sliding gears and clutches operate on large square sections of the auxiliary shafts and spindle. The spindle bearings are large, the front spindle bearing being 6½ in. in diameter and 10 in. long.

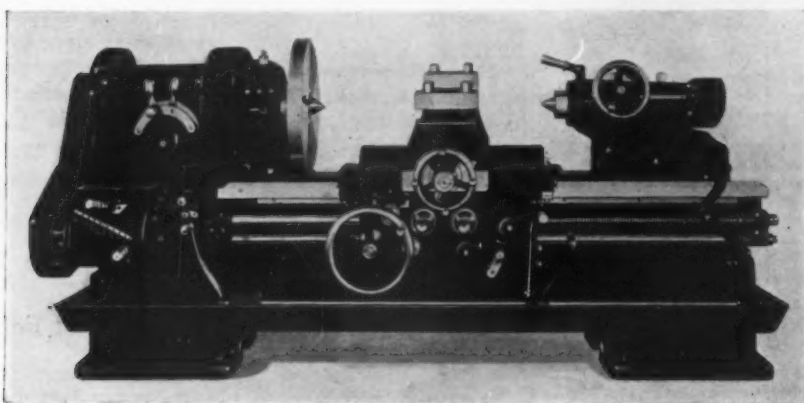
Four or eight mechanical speed changes may be

Great Saving by Simplification

WASHINGTON, Nov. 11.—Making a formal request that the Division of Simplified Practice, Department of Commerce, call a conference of all interested groups, the National Association of Purchasing Agents, seeking to bring about a simplification of invoice, inquiry and purchase order forms, estimates that a saving of \$15,000,000 annually can be made to the business concerns of the country.

Lake Superior Iron Ore Shipments in October

Shipments of iron ore from Lake Superior in October were 5,596,648 gross tons as compared with 8,099,443 (revised) tons in October, 1923. This is a decrease of 2,502,795 tons or 30.90 per cent. The season's shipments to Nov. 1, this year, have been 40,558,525 (revised) tons as compared with 54,088,562 (revised) to Nov. 1, 1923, a decrease of 13,530,037



The 26-In. Lathe for Heavy Work Is Shown at Left. It may be equipped with geared or cone headstock drive. Four or eight mechanical speed changes may be obtained through two levers on the front of the headstock and 32 feed changes or thread pitches are available

obtained by means of two levers on the front of the headstock. All gears in the quick-change gear box and feed mechanism are of heat-treated steel. The quick-change gear box provides 32 threads and feed changes, the range of threads being 1½ to 23 per in. and the range of feeds from 7½ to 115 per in.

A 20 or 25 hp. constant-speed, or 3 to 1 variable speed motor can be mounted either on the floor at the rear of the headstock or on top of the headstock. The former mounting is recommended, the drive being through a silent chain to a large friction clutch sprocket on the mutual driving shaft. The friction driving clutch is operated by a lever at the right hand wing of the apron. Electrical apron control may be provided, and an additional lever attached to the apron permits of starting, stopping, or reversing the lathe electrically, and in the case of a variable speed motor, to secure any spindle speed electrically from the operators position in front of the carriage.

The tailstock is heavy and is held down by four 1¼-in. clamping bolts. There is also a rack cast in the center of the bed to assist in supporting the tailstock and keep it from sliding on the bed. The tailstock is provided with a hand wheel and rack and pinion to facilitate moving. Thrust of the tailstock screw is taken against a heavy ball thrust bearing, between the shoulder of the screw and the end of the tailstock. The travel of the tailstock spindle is by means of the hand-wheel at the front of the tailstock, through miter and spur gears.

All apron gears and studs are of steel and heat treated. The cross and longitudinal feed frictions are operated by a ball handle. Apron bearings are oiled from a central reservoir. Any type of tool rest may be provided, including front and rear independent tool blocks which are operated independently or brought to a common center at the will of the operator. They are provided with automatic diameter stops.

The swing of the 26-in. lathe over the bed is 26½ in., and the swing over the carriage 16¼ in.

tons or 25.01 per cent. The following table gives the October and season shipments by ports and the corresponding figures for 1923 in gross tons:

	October		To Nov. 1	
	1924	1923	1924	1923
Escanaba	670,283	605,173	3,740,626	5,169,700
Marquette	391,551	361,193	2,234,004	2,482,179
Ashland	553,819	700,407	4,485,685	5,900,101
Superior	1,596,777	2,658,163	12,837,822	16,410,223
Duluth	1,709,823	2,914,222	12,600,988	18,224,497
Two Harbors	674,395	860,285	4,659,400	5,901,862
Total	5,596,648	8,099,443	40,558,525	54,088,562
Decrease	2,502,795		13,530,037	

The Duluth proportion this year to Nov. 1 of 31.07 per cent is less than a year ago when it was 33.69 per cent of the total. The Great Northern dock at Superior is credited with 28.69 per cent of the total shipments this year against 26.82 per cent last year.

Merchants' Association of New York

In the 1924 Year Book of the Merchants' Association of New York, a volume of 380 pages, the activities of the association, particularly with regard to civic betterment and improved efficiency of operation of its members, are reported. The membership is not confined to the city, but is drawn as well from Newark, Jersey City, Hoboken and other contiguous points. The membership of 7093 consists of individuals, firms and corporations connected with every trade, industry and profession doing business in the city.

One prominent feature of the book is the classified listing of members in 49 separate divisions, many of which have numerous subdivisions. Among the divisions allied with the iron and steel and other metal industries and with building construction are No. 21, devoted to iron and steel, metals, heavy hardware and machinery; No. 22, general hardware and hardware specialties, and No. 18, engineering, building and building equipment.

Iron Ore Reserves of Eastern Hemisphere

A Study of the Ore Situation of Europe, Asia, Africa and Australia, with Particular Reference to Sources Which Ultimately May Become Available for Smelting in American Furnaces

BY OLIN R. KUHN*

[In the portion of this article which was published last week, at page 1204, survey was made of the iron ore reserves of the Western Hemisphere. At the same time an analysis was made of the probable requirements of the United States for iron ore for the next 300 years, the total being approximately 65,000,000,000 gross tons. In the present section of the article the situation in the Eastern Hemisphere is surveyed, it being recognized at the start that comparatively little of the ore in the Eastern Hemisphere is likely to become available for consumption in the United States. There are certain exceptions to this statement, as it is conceivable that considerable quantities of special ores may be exported by the various producing countries in the Eastern Hemisphere.—EDITOR.]

United Kingdom

The reserve of England, Scotland and Wales has been estimated by the Imperial Mineral Resources Bureau of London to be 2263 million tons, the bulk of which are carbonate and jurassic ores averaging from 25 to 35 per cent iron. The largest deposits are in Lincoln, Stafford and Cleveland Counties and some hematite ore averaging about 50 per cent iron has been found in Cumberland and Lancaster Counties. England produces only 15 to 16 million tons of ore annually, which is not nearly enough for its consumption, so that it draws on Spain, Norway and Sweden for the remainder of its requirements.

Norway

The largest deposits of ore are in Northern Norway at Dunderlandstal, containing over 150 million tons of hematite ore averaging about 35 per cent iron. The next largest deposit, and probably the most important, at Sydvaranger, contains over 100 million tons of magnetite ore averaging 50 per cent iron. There are several ore deposits on the Lofoten Islands and some high-grade ore in Southern Norway. Birkenbine estimates the total reserve of Norway at 350 million tons, with a potential reserve of two or three times as much. Norway has no iron industry and practically all of its ore production, about 100,000 tons annually, is exported to England and Germany.

Sweden

The latest reports from the Society of the "Friends of Mining" in Sweden state that deep borings over the last ten years in the region of Kiruna near Lake Luosajarris, have shown conclusively that this district contains over 1½ billion tons of high-grade magnetite ore averaging from 58 to 68 per cent iron. This is a large mountain of ore and the borings show that the deeper the ore lies the richer in iron and the lower in phosphorus it becomes. Additional large deposits are found at Gellivare and in Central Sweden at Grängesberg. The deposits in Central Sweden are hematite, while the others are all magnetite. Some titaniferous deposits also are found in Central Sweden.

The actual reserve of high-grade ore in Sweden can be placed at about 2 billion tons, with a potential reserve of about 1½ billion tons. Sweden is renowned for the great purity of its iron ores, which are of extremely low phosphorus content, and as the United States needs about 1,000,000 tons of low phosphorus (under 0.015 per cent) ores annually, the bulk of this tonnage probably will come from Sweden. Sweden produces from 6 to 7 million tons of ore annually and

consumes only about 20 per cent of it; the remainder is exported to Great Britain, Germany, Belgium, France and the United States.

Germany

Since the war, by the loss of the Lorraine fields, the reserves of Germany have been greatly reduced, and even more so with France in possession of the Ruhr Valley. The ores of Germany are low-grade brown hematite averaging from 30 to 48 per cent iron and, in some cases, must be roasted to reduce the moisture. Germany, without the Lorraine field, produces only from 5 to 10 million tons annually, while in 1923 it consumed 48 million tons, so that in the future it will have to import a great part of its ore, probably from Sweden, Norway, France and Spain.

About 90 per cent of the reserve, which is estimated at about 750 million tons, is located in the Rhine and Weser fields. The potential reserve probably will be around 3½ billion tons. Luxemburg has about 250 million tons of ore in the Lorraine basin, which is controlled by Germany, so that the total reserve of Germany can be put at one billion tons.

France

France ranks next to the United States and Brazil in reserves of available iron ore, the largest deposits being those of the Lorraine basin, which are estimated to contain between 4 and 5 billion tons of low-grade brown or minette ore, averaging from 25 to 40 per cent iron and generally high in phosphorus. The other large deposits are in Normandy and Brittany and are mostly of the brown ore type, although there is some hematite ore, averaging 50 per cent iron, found in this district. A little spathic ore is found in the Pyrenees and some magnetite around Dielette. A. C. Spencer estimates the reserve of ore in France, outside of the Lorraine district, to be about 2½ billion tons, which would make the total reserve for France from 6¼ to 7¼ billion tons. France produces about 7 million tons of pig iron annually.

Spain

Deposits of iron ore are scattered all through Spain and the ores generally are brown hematite, carbonate or spathic, averaging from 50 to 65 per cent iron, and are, as a rule, very low in phosphorus. The Huelva deposits in Southern Spain—the largest—are estimated to contain about 200 million tons. The total reserve of Spain is estimated at some 700 million tons and the potential reserve at about the same amount. Spain exports ore to the United States, Germany, France and practically all other countries, and about half of the pig iron produced in Great Britain is made from Spanish ores. Spain produces about 10,000,000 tons annually, and until recently consumed very little.

Austria

Before the war Austria had a considerable reserve of iron ore, but now, with the restricted territory, it is estimated at only about 250 million tons. These are the Erzberg deposits in Styria and the Hüttenberg deposits of Carinthia. The ore is, as a rule, low-grade brown ore and must be roasted before it is suitable for use.

Russia

The largest ore bodies in Russia are found in the central and southern parts and the most extensive of these are the deposits at Lipetsk, but the ore aver-

*Donner Steel Co., Buffalo.

ages only about 40 per cent iron. This deposit contains from 300 to 500 million tons of brown ore. Some high-grade hematite, averaging from 50 to 70 per cent iron, is found in the southwest around Krivoi-rog and a good sized deposit of colitic ore in the Kerch district. Russia produces about 10,000,000 tons of ore annually, and the total reserve can be taken roughly at one billion tons, with a potential reserve of twice that figure. Russia is one of the world's largest producers of manganese ore, which is mined in the Tichiatouri district near the Black Sea.

China

Chung-Yu Wang, before the American Iron and Steel Institute in 1923, stated that from recent estimates the reserve of ore in China is over 900 million tons. [THE IRON AGE, Nov. 8, 1923, page 1247.] This

the world's largest deposits of manganese ore are located in India. Some Indian iron ore is exported to England, but most of the production is consumed in its own furnaces, of which the Tata Iron & Steel Co. is the largest operator.

Japan

The iron ores of Japan are widely distributed and the total available tonnage is fairly large, but there is no large single deposit. [See THE IRON AGE, Nov. 15, 1923, page 1317.] There are five producing districts in Japan and Chosen, the Kamaishi, Makakasaka and Hitekabe containing magnetite ore averaging 55 to 60 per cent iron, and the Sennin and Chugeku deposits containing hematite. Although there are available no accurate estimates of the reserves of Japan, it is safe to assume that Japan and Chosen have a reserve of

Table IV.—Iron Ore Reserves of the World

Country	Actual Reserve, Million Tons	Potential Reserve, Million Tons	Kind of Ore	Approx. Iron Content, Per Cent	Estimated Annual Production, Tons
Europe:					
United Kingdom	2,250	9,500	Carbonate	25 to 35	15,000,000
Norway	350	1,000	Clinton Hem.	35 to 50	1,000,000
Sweden	2,000	1,500	Magnetite	58 to 68	6,500,000
Germany	1,000	3,500	Hem. and Brown	30 to 48	7,500,000
France	7,000	5,000	Minette	25 to 50	35,000,000
Spain	700	700	Brown	50 to 65	10,000,000
Austria	250	200	Brown	45 to 50	.....
Russia	1,000	2,000	Brown	40 to 70	10,000,000
Rest of Europe	700	1,600	Brown and Spathic	30 to 50	1,000,000
Total Europe	15,250	25,000			86,000,000
Asia:					
China and Korea	1,000	1,000	Hem. and Mag.	35 to 62	2,500,000
India	600	1,000	Hem. and Mag.	60 to 62	600,000
Japan and Chosen	50	100	Hem. and Mag.	55 to 60	600,000
Total Asia	1,650	2,100			3,700,000
Africa:					
North Africa	250	.....	Hematite	50 to 60	1,500,000
South and West	200	.....	Hematite	50 to 60	.....
Total Africa	450	1,000			1,500,000
Oceania:					
Australia	400	.....	Hem. and Mag.	46 to 68	500,000
Borneo	100	.....	Hematite	48 to 50	.....
Philippine Islands	400	.....	Laterite	.....	.....
Total Oceania	900	1,000			500,000
South America:					
Venezuela	400	.....	Magnetite	62 to 65	60,000
Chile	300	.....	Hematite	60 to 65	100,000
Brazil	7,500	.....	Hem. and Mag.	58 to 62	.....
Total South America...	8,200	2,000			160,000
North America:					
Newfoundland	4,000	4,000	Hem. and Mag.	48 to 57	1,000,000
Canada	300	20,000	Hem. and Mag.	50 to 65	200,000
United States	8,000	75,000	Hem. and Mag.	45 to 65	75,000,000
Mexico	100	.....	Hem. and Mag.	55 to 65	.....
Cuba	3,150	12,000	Hem. and Brown	40 to 50	1,000,000
Porto Rico	800	.....	Limonite	20 to 52	.....
Total North America...	16,350	111,000			77,200,000
Total reserve	42,800	142,100			169,060,000

ore is both hematite and magnetite and will average from 35 to 62 per cent iron content. The Province of Fengtien contains the largest reserve, being credited with almost 300 million tons. China produces about 1,000,000 tons of pig iron annually and consumes from 2 to 2½ million tons of ore, the remainder of the ore production, from 300,000 to 600,000 tons, being exported to Japan. The known reserves of China and Korea can be taken at one billion tons and the potential reserves at an equal amount.

India

The main ore deposits of India are hematite, similar to those of the Lake Superior district, and are located at Mayurbhanj and Singhum in Behar, at Orissa, Clanda and Drug in the Central Provinces and at Kadur in Mysore. The ores are high grade, averaging about 60 per cent metallic iron, but on account of the small portion of India that has been explored no accurate estimate of the reserve can be given, although it is safe to say that there is at least 600 million tons of available ore averaging about 60 per cent iron and a potential reserve of about one billion tons. Some of

high-grade ore of not more than 50 million tons, with a potential reserve of about 100 million tons.

North Africa

The most noted deposits of iron ore in Africa are those of the northern coast in Tunis, Algeria and Morocco. The ores are generally high-grade hematite, averaging from 50 to 60 per cent iron. These countries contain a known reserve of about 250 million tons.

South and West Africa

Brown hematite ores have been found in Egypt and the Sudan, but the deposits are scattered and little is known of them. Some magnetite deposits are reported in Uganda, British Somaliland and East Africa Protectorate, and there are large bodies of ore in the Congo and German East Africa, but no estimate of the reserves has been made.

Various types of ore are found in South and West Africa, somewhat similar to those found in Cuba. They are generally of high silica and alumina content and fairly high in iron. One deposit in French West Africa, explored recently, is said to contain a reserve of about

100 million tons. Other deposits are found in Rhodesia and the Transvaal, but, like the rest of Africa, little is known of the reserve tonnage, although it safely can be put at 200 million tons. Africa exports practically

Table V.—World's Reserve of Iron Ore
(In Millions of Tons)

	Sjogren— 1910	Eckel— 1914	1924
Europe	12,032	12,032	15,250
Asia	260	.....	1,650
Africa	125	.....	450
Oceania	136	.....	900
South America.....	9,855	8,000	8,200
North America.....		14,760	16,350
	22,408	34,792	42,800

all of her ore, mainly from North Africa, for practically none is mined elsewhere. The North African ores are shipped to England, the United States, France,

hematite and magnetite. The largest deposit is "Iron Knob and Iron Monarch" in South Australia, which is said to contain 130 million tons of hematite ore averaging 68 per cent iron. Large deposits of high-grade ore are found also in the northern part of Western Australia on Koolan and Cockatoo Islands, and deposits of variable size in New South Wales, the largest being at Cadia, which is said to contain 40 million tons of hematite and magnetite ore averaging about 58 per cent iron. The production of Australia averages about 500,000 tons annually, of which amount South Australia produces about 80 per cent. Australia has its own iron industry, which is growing rapidly, so that probably little of its ore will be exported.

Borneo

A deposit of hematite ore containing about 100 million tons, averaging 48 per cent iron, has been explored recently on the Island of Borneo. This ore body averages about 20 ft. in thickness and will be operated



LOCATIONS of the Principal Iron Ore Deposits of Europe and Northern Africa. Most of the ore raised here is smelted not far away from the pit. But the ores of Spain and Northern Africa are exported to furnaces in other lands. It is conceivable that some day the United States may draw heavily on these sources of supply

etc., and the production varies from 1 to 2 million tons annually.

Australia

In 1922 David Baker, before the American Iron and Steel Institute, gave the reserve of ore in Australia as

Table VI.—Reserves of Ore in United States
(In Tons)

Hays—1908	4,788,000,000
Butler—1909	4,463,000,000
and Birkenbine—1909 }	5,200,000,000
Eckel—1914	to 7,550,000,000
1924	8,000,000,000

between 350 and 400 million tons, most of which is of high grade, averaging about 65 per cent iron. [See THE IRON AGE, June 29, 1922, page 1821; also July 15, 1920, page 171.] Various kinds of ore are found, brown,

by the Borneo Iron & Steel Works, which has been formed for that purpose.

Philippine Islands

Some deposits of laterite iron ore have been found in the Province of Surigao in Northern Mindanao, which are said to contain over 400 million tons, but as yet little is known about them.

Summary

Following is a summary of the reserves of ore that have been made from time to time and the reserves given in this paper. Several countries and ore bodies have been reestimated and new discoveries made over the last ten years that have increased the reserve materially. The largest explorations have been made in the Northeastern States district in America, in Sweden, China, Australia and Cuba. Then, again, many countries were not included in the prior estimates.

GERMAN STEEL SYNDICATE

Need Felt for an Effective Instrument—Relations with France Await Adjustment

BERLIN, GERMANY, Oct. 23.—Since the middle of this month representatives of steel and rolling mill industries have been conferring with the aim of creating a new steel syndicate. A draft constitution for the syndicate has been submitted, and 90 per cent of the interests support the scheme in principle. So far it has been decided that the syndicate shall not be a selling corporation, but an organization for apportioning among corporations and firms their shares in the total national output, with the aim of reducing production in an equitable way. With this does not necessarily go direct price fixing.

This German plan proceeds independently of the scheme for an international syndicate, in which Belgium is at present the chief mover. Among the approving concerns are Rheinische Stahlwerke, Gutehoffnungshütte, Kloeckner and Thyssen. Characteristic of the reversal of tendencies is that the initiative came from Fritz Thyssen, who until lately strongly opposed the whole syndicate system, and who retarded and nearly wrecked the recent negotiations for restoration of the Rhenish-Westphalian Coal Syndicate.

Recent Tendencies Reversed

Desire for the creation of an effective steel syndicate is an outcome of the reversal of tendencies mentioned. A year ago it was proclaimed without dissent that the age of the syndicates had come to an end, and even early this year several old industrial syndicates were wound up. When the question came up in 1919 the main argument adduced against renewal of the old "Stahlwerksverband" was that the shortage of iron which prevailed was likely to be chronic. Regulation and rationing of production by a syndicate was therefore superfluous. At that time and during the following inflation years German works had more orders than they could execute, and in the matter of prices the interests of the consumer had to be protected by the Ministry of Industry.

A further fact adduced in 1919 was that no one then could foresee the effect of the secession from the Stahlwerksverband of the Lorraine, Luxemburg and Sarre steel works. Important producing concerns, lost to Germany under the Peace Treaty, such as Rombach, Stumm, Burbach-Eich-Dudelingen and Roehling, and the works in Kneuttingen, Hagendingen, Esch and Diferdingen, were free under the treaty to sell on the German market without being subject to the restrictions which a German syndicate might impose. As a result of these conditions the Stahlwerksverband was not renewed. The first of the conditions—the shortage of supply—has changed since then, and the second will change when Germany regains her complete tariff freedom on Jan. 10, 1925.

More Iron Made Than Can Be Sold

The iron famine has been replaced by a superfluity, the Rhenish-Westphalian concerns fight one another to get orders, and must at the same time compete with the works of Lorraine, Luxemburg and Belgium. Prices have fallen catastrophically, and are in part below the average of pre-war years. Considerable unemployment prevails. At the end of September 18.24 per cent of metal labor union members were fully unemployed, against less than 1 per cent in the best months of the inflation-boom period. Present steel production is estimated at only 70 per cent of full capacity. The engineering branch is only about 40 per cent occupied, the shipbuilding branch 25 to 30 per cent, and the Bridge Construction Syndicate, which before the war sold 400,000 metric tons a year, sold only 96,000 tons between July, 1923, and June, 1924.

This condition inevitably brought up the notion of reviving the Steel Syndicate in an effective form. Since price fixing for semi-finished material and rolling-mill products was abandoned when the last great price-fall set in, the present Stahlbund has been little more than a manufacturers' association for exchange

of experiences. The initiators of the new syndicate movement start from the assumption that the output, if works were operated at full capacity, could not be disposed of; and that therefore a strong syndicate which will ration production and thereby check unreasonable price-falls is indispensable.

Mere resurrection of the Stahlwerksverband as it existed immediately before the war would not meet the situation. Originally this association dealt with two classes of goods, the A products or heavy materials, including semi-finished steel, rails, etc., and B products, comprising merchant bars, sheets, wire rods, wire, etc. With the cessation of control of the B products the Stahlwerksverband lost a great part of its power.

Subordinate Syndicates Planned

The present plan is for a syndicate which will control all raw steel production, but within the limits of which will be room for special subordinate syndicates handling specialized products. In regard to the latter difficulties are expected. Rationing even the raw steel production may cause trouble because, whereas selling markets have contracted since 1913, most of the works left to Germany have increased their productive capacity. Satisfactory rationing of production of specialized products by subordinate syndicates will be faced by even greater difficulties, because the capacity of individual works is doubtful and some works are inclined to make exorbitant claims.

Also the question is not yet decided whether the subordinate syndicates would be entrusted with the sale of the products of their component concerns or merely with rationing of production. Many concerns are against joining syndicates which have a selling monopoly. In the last few years all the big corporations have formed their own trading organizations.

International Steel Syndicate

The Westphalian trade press declares that the plans for creating an international steel syndicate have very small chance of materializing until national syndicates first have been formed in all the chief producing countries. In principle, it is added, Germany is not against joining an international syndicate if invited. But already German producers are pronouncing against alleged designs by France to obtain an exaggerated export quota as her share in the international syndicate. The formation of an international syndicate will, it is realized, take a long time, and probably will not be at all practicable until the pending commercial treaty and tariff questions are settled.

An immediate question is the creation of an international rail syndicate, such as existed before the war. Here oppositions are not sharp and pre-war experience shows the necessary lines. Meantime the German movement for effective protective import duties on heavy iron and steel is becoming stronger. Here, in contradistinction to Austria, there is so far no opposition from the iron and steel consuming manufacturers; and the heavy iron producers are trying to gain working-class support with the argument that the payment of a living wage depends upon the maintenance of a reasonably high home price-level for metal goods.

Relations with France Delicate

The Westphalian trade press observes a confident and almost threatening attitude toward the French and Lorraine iron industry. A conciliatory settlement in the tariff and syndicate questions is demanded under threat of retaliation. Germany, it is proclaimed, can do without Lorraine minette and French pig iron, whereas France cannot possibly manage without Ruhr coke and without facilities to export metal goods to Germany. France, it is affirmed, is threatened with overproduction of industrial products as a result of the disproportionately great output of such goods by Alsace-Lorraine; and if she embarks on a trade war with Germany she will be obliged to sell her excess pig iron production at whatever price it will fetch.

"The Lorraine iron ore and smelting industries," writes the Stinnes-owned *Deutsche Allgemeine Zeitung*, "had a justification for existence only so long as Alsace-Lorraine belonged politically to Germany."

FOUNDRYMEN IN NEW YORK

Discussions on Costs, Industrial Relations and Present Economic Problems

The annual meetings of the National Founders' Association, which for many years have been held in New York, are among the most notable gatherings in the metal working industries. The 28th convention will be held at the Hotel Astor on Wednesday and Thursday, Nov. 19 and 20. The program follows:

Wednesday Morning

Reports of the Officers:

President, William H. Barr.
Commissioner, A. E. McClintock.
Secretary, J. M. Taylor.

Reports of Committees:

New Membership, H. J. Boggis, chairman.
Industrial Education, L. W. Olson, chairman
"Coming Shadows." By James A. Emery, counsel National Founders Association.

Wednesday Afternoon

"Communism and Common Sense." By Jacob H. Rubin, Milwaukee.

"Better Understanding Between Industry and Agriculture." By a representative of the National Grange.

"Industrial Relations in Industry." By J. M. Larkin, assistant to president Bethlehem Steel Co.

"My Economic Creed." By Col. Alfred P. Thom, general counsel Association of Railway Executives.

Convention Dinner, Wednesday Evening at 7

"Adjusting Ourselves to the New Era in Business." By Harry Collins Spillman, New York.

Thursday Morning

"Foundry Cost Methods—Wise and Otherwise." By E. T. Runge, E. T. Runge Cost Co., Cleveland.

"Apprenticeship in the Foundry." By L. A. Hartley, Supervisor of Trade and Industrial Education, State of Nebraska, Lincoln.

Reports of Resolutions Committee.

Report of Finance Committee.

Miscellaneous.

Election of Officers.

The usual annual meeting of the administrative council will be held Tuesday, Nov. 18, at 10 a. m., and the alumni dinner for past officers, Tuesday evening at the Hotel Astor.

Joint Safety Conference Is Held at Pittsburgh

PITTSBURGH, Nov. 10.—The American Society of Safety Engineers, the engineering and mining sections of the National Safety Council, the Pennsylvania Department of Labor and Industry, the Coal Mining Institute of America, the United States Bureau of Mines, the Pennsylvania State Department of Mines and the Western Pennsylvania Safety Council, participated in a joint safety conference held in the auditorium of the Chamber of Commerce here today.

At the morning session, Richard H. Lansburgh, secretary, Pennsylvania Department of Labor and Industry, presented a program of cooperative effort in safety work of industries in Pennsylvania with the Department of Labor and Industry. J. T. Ryan, Mine Safety Appliances Co., presided at a symposium on "Rock Dusting for the Prevention of Mine Explosions." Edward Steidle, Carnegie Institute of Technology, spoke on "The Need of Rock Dusting," and T. G. Fear, Inland Collieries Co., on "Rock Dusting the Indianola Mine." Developments in connection with rock dusting were shown in a series of slides by Mr. Ryan.

J. A. Oartel, Carnegie Steel Co., Pittsburgh, was general chairman at the afternoon session. He introduced Rev. Charles H. Rust, minister of the Wilkesburg Baptist Church, Wilkesburg, Pa., whose subject was "Men and Machines." His talk was followed by a symposium on "Practical Safety Kinks," with exhibits and slides, contributors to which were C. B. Auel, Westinghouse Electric & Mfg. Co., J. A. Northwood, Bethlehem Steel Co., Johnstown, Pa., A. R. Pollock, Ford Collieries Co., J. T. Ryan, Mine Safety Appliances Co., A. C. Gibson, Spang Chalfant & Co., H. F. Webb, West Penn System, and C. F. Abel, U. S. Aluminum Co.

A second symposium on "Shop Safety Education Stunts," with exhibits and slides, introduced A. C. Cook, Carnegie Steel Co., Youngstown, whose subject

was "Running a Safety Drive," and E. S. Wright, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa., who spoke on "Four Years Without a Lost Time Accident."

To Promote Personnel Research

To promote research activities pertaining to personnel in industry, commerce and government is the aim of the Personnel Research Federation, which has been established recently under the auspices of the Engineering Foundation and the National Research Council.

Dr. W. V. Bingham, professor of psychology, Carnegie Institute of Technology, Pittsburgh, has been appointed director of the Federation.

The formation of the Federation is regarded as a definite effort to study, from the standpoint of the national welfare, the value of what has become known as the "human factor." It aims to further the application of scientific research to problems affecting the happiness, welfare and efficiency of the great body of workers.

In a recent statement relating to the movement, Alfred D. Flinn, director Engineering Foundation, New York, and secretary of the Federation said:

"The right man in the right place, implies study not only of the abilities, training and economic needs of men and women, but also of conditions of work, incentives, rewards, and opportunities for growth and advancement. To encourage and coordinate investigations bearing on these vitally important subjects is the function of the personnel movement.

"Physicians, physiologists, psychiatrists and psychologists are cooperating in this movement, as well as educators, economists and management engineers. Representatives of organized labor, of the Civil Service and other government departments, of manufacturers' and merchants' associations, and of university groups, share in the control of its activities."

Dr. Bingham will establish headquarters at the offices of the Engineering Foundation, 29 West Thirty-ninth Street, New York.

American Institute of Steel Construction at French Lick This Week

A full program is provided for the annual convention of the American Institute of Steel Construction at French Lick, Ind., Nov. 13-15. The institute now has a membership of 172 fabricating plants located in the United States and Canada and representing approximately 96 per cent of the total industrial capacities exclusive of those connected with steel mills. The executive director, Charles F. Abbott, announces that the Zeppelin ZR-3 will figure in the program in a unique way. Among the papers to be discussed are the following:

"The Basic Principles to be Considered in Fireproofing Structural Steel." By A. W. Sinnamon, member Engineering Institute of Canada.

"Education and Training for Aggressive Sales Work." By R. C. Hay, manager sales training, American Radiator Co., Buffalo.

"Benefits of a Uniform Method of Cost Accounting." By William R. Basset, president Miller, Franklin, Basset & Co., New York.

Report on the Adoption of the Standard Specification and Benefits the Fabricators of Structural Steel May Expect. Lee H. Miller, chief engineer.

Progress Report on a Standard Handbook and Manual for the Structural Steel Industry with an Outline of Its Relation to Each Individual Fabricator. Lee H. Miller, chief engineer.

"Training the Engineer." By A. E. Crockett, manager bureau of instruction, Jones & Laughlin Steel Corporation, Pittsburgh.

"The Structural Steel Industry and Its Relation to the Upbuilding of Our Country." By Hon. John W. O'Leary, vice-president Chicago Trust Co., Chicago.

"Transportation and Industrial Development." By Elisha Lee, vice-president Pennsylvania Railroad Co., Pittsburgh.

EXPORT TRADE LIGHT

Far Eastern Railroad Buying Principal Feature— Continued Interest in Tin Plate

NEW YORK, Nov. 11.—Business from Far Eastern markets is extremely light. With less active hostility between the warring factions in China, there is some small inquiry coming into the market from merchants, but little business has been transacted. In Japan stocks of structural material are reported as still heavy and sufficient for current demand. Much of the structural steel in stock was purchased in the months following the earthquake in anticipation of wide building activity, which has failed to materialize except on a limited scale. A recovery of the exchange rate on the yen would doubtless result in an increase in merchant buying, but such a change is not generally expected before next year.

Few of the recent inquiries from large Japanese companies are reported to have been closed. The Imperial Government Railways, in the market for 11,000 tons of rails, have recently asked for revised prices to be in today, Nov. 11. The South Manchuria Railway Co. is receiving bids on three sets of 33 units each of super-heater tubes.

Importers of continental steel into the United States are encountering complaints as to quality, based on the experiences of buyers of various small lots taken last spring. Importers with German connections are now offering to quote on open-hearth steel rolled to American specifications, but the price as a rule represents but little saving from the current domestic market. While a large part of the complaint of consumers and jobbers is directed at Belgian steel products, it is pointed out by importers with Belgian connections that much of the Belgian steel that proved unsatisfactory was material made for export to countries where price was the only consideration and never was intended for American consumers, whose requirements are severe.

Steel Corporation's Unfilled Orders Increase

Unfilled business on the books of the United States Steel Corporation as of Oct. 31 aggregated 3,525,270 tons, or 51,490 tons more than remained unfilled Sept. 30, and the largest amount recorded since May 31, last. In September the unfilled tonnage increased 184,203 tons, and in August 102,505 tons, while in July it decreased 75,433 tons, in June 365,584 tons, in May 580,358 tons, in April 574,360 tons, and in March 130,094 tons. In February there was an increase of 114,472 tons in the unfilled business and in January 353,090 tons. A year ago the unfilled business was 4,672,825 tons, or 1,147,555 tons more than on Oct. 31, last. Following is the unfilled tonnage as reported by months beginning with January, 1922.

	1924	1923	1922
Jan. 31.....	4,798,429	6,910,776	4,241,678
Feb. 29.....	4,912,901	7,283,989	4,141,069
March 31.....	4,782,807	7,403,332	4,494,148
April 30.....	4,208,447	7,288,509	5,096,913
May 31.....	3,628,089	6,981,351	5,254,228
June 30.....	3,262,505	6,386,261	5,635,531
July 31.....	3,187,072	5,910,763	5,776,161
Aug. 31.....	3,289,577	5,414,663	5,950,105
Sept. 30.....	3,473,780	5,035,750	6,691,607
Oct. 31.....	3,525,270	4,672,825	6,902,287
Nov. 30.....		4,368,584	6,840,242
Dec. 31.....		4,445,339	6,745,703

Business of Secondary Steel Industries at Youngstown Improving

YOUNGSTOWN, Nov. 11.—The secondary steel industry in this territory is feeling the stimulating influences of the national election outcome, but seasonal conditions are retarding new buying. Fabricators, however, are maintaining operations at an average 75 per cent rate. The General Fireproofing Co. reports that its metal furniture and filing cabinet department is leading in activity at present, the demand for fireproofing materials being held in check.

The Youngstown Pressed Steel Co. at Warren is

enlarging upon the varieties of its production. It is producing gasoline containers and pressed metal tanks for pumps in a substantial way, its product being absorbed by some of the principal gas and oil pump makers in the country.

The Truscon Steel Co. is maintaining a 75 per cent average output, with less demand than usual for highway reinforcing steel, fireproofing products and other steel building products.

Much current production is going into the replenishment of dealers' and jobbers' stocks, while mill warehouse stocks are also being balanced and built up, in anticipation of heavy spring requirements.

Traffic Officials at Pittsburgh Investigating Rate Situation

Another meeting of the traffic officials of steel companies in the Pittsburgh and nearby districts will be held at the Chamber of Commerce of Pittsburgh, Wednesday, Nov. 12. The committee appointed at a meeting held Oct. 30, to look into the freight rate situation on iron and steel products moving West and South will report and it is expected definite action will be taken in the direction of forming a demand upon the Interstate Commerce Commission for a rate revision that will put Pittsburgh and greater Pittsburgh producers on a more nearly even footing with those in the Central West and in the South than now appears to be the case. A. R. Kennedy, traffic manager, Pittsburgh Steel Co., Pittsburgh, is leading this rate revision movement, the need of which has been intensified by the recent abolition of Pittsburgh as a sole basing point on steel.

Wages of Sheet and Tin Mill Workers to Be Reduced Slightly

Tonnage rates paid sheet and tin mill workers in mills subscribing to the sliding scale wage agreement of the Amalgamated Association of Iron, Steel and Tin Workers will be reduced 1½ per cent of the base rate for the November-December period. The reduction follows a decline in the average selling price as revealed by examination of sales sheets Nov. 10 at Youngstown.

The examination disclosed an average selling price on Nos. 26, 27 and 28 gage black sheets shipped during the 60 days ending Oct. 31, of 3.45c. per lb., a reduction from the 3.50c. average revealed the preceding two months. Under the new rate, affected workers will be paid 39 per cent above base.

The new eight-mill sheet plant of the Youngstown Sheet & Tube Co., which will get under production next Monday, will be operated under an open shop arrangement, in line with the company's policy.

Cost of Eye Injuries in New York State

According to an analysis of workmen's compensation cases received by the National Committee for the Prevention of Blindness, New York, from the State Department of Labor, injuries to the eyes of workers cost employers in New York State more than a million dollars during the year ending June 30, 1923, the last year for which statistics are available.

The report shows that there were 602 cases of permanent injuries to the eyes of employees; that these injuries resulted in 54,000 weeks of disability, and that \$992,705 in compensation was paid to the victims. In addition there were 12 cases of combined eye injuries and face disfigurements which resulted in 1439 weeks of disability and for which \$27,855 compensation was paid. More than 800 additional cases of injuries to the eyes resulted in temporary disability and the payment of compensation for lost time. The compensation paid for permanent eye injuries in New York State, according to this analysis, is approximately one-eighth of the total amount of compensation paid for all non-fatal injuries in the industries of the State.

GRADUALLY IMPROVING

More Liberal Buying and Increased Inquiry in the Youngstown District

YOUNGSTOWN, Nov. 11.—Despite some over-emphasis by the daily press on the actual improvement in the iron and steel industry in this territory since the election, improved sentiment has been followed by freer buying and larger inquiry volume. Bettermen in the actual placing of orders has been more pronounced in pig iron than in rolled steel products.

Throughout this district, the reelection of President Coolidge with assurance that prevailing national policies will be continued for at least four years, served as a reassuring and stabilizing influence. The strength of the radical movement was an unknown quantity, especially in its earlier stages, and served as a disquieting influence, insofar as business interests were concerned.

The statement of President James A. Campbell of the Youngstown Sheet & Tube Co. that "we will have fair to good business and corresponding operations until the end of January," is regarded as a fair forecast.

Another outstanding assertion by Mr. Campbell is that the Sheet & Tube company will not accept any orders for delivery during the first quarter of 1925 at current price levels, upon the assumption that prevailing figures are too low. "Prices are too low at present and in many instances carry an actual loss instead of a profit," he states. "I look for advanced prices on all finished products for the first quarter. At present prices are firm."

Mr. Campbell states that despite the approach of the inventory-taking period, many buyers who have heretofore been hesitant in placing forward tonnages, are now buying their requirements over the rest of the year. There is a considerable volume of inquiry before the trade affecting first quarter shipments.

In this district, Valley steel company executives are optimistic with respect to the immediate future, though they do not look for any boom business. They have abundant faith in the President. Mr. Campbell states that President Coolidge has a better grasp of agricultural and industrial problems than any national executive in many years, and that he may be expected to do everything possible in a highly constructive way to promote the country's prosperity.

The expansion this week in sheet mill schedules by Mahoning Valley producers is not so significant as to the trend of business, as is the improvement in pig iron buying, which steel interests predict presages more activity in rolled steel products. Last week two Valley sheet producers were wholly idle, and broader production would naturally have followed, with tonnages accumulating in the meantime.

More Forward Buyers of Sheets in Mahoning Valley

YOUNGSTOWN, Nov. 11.—The sheet division of the steel industry in the Mahoning Valley has benefited in a larger way from improved buying since the election than any other finished steel department. There are indications, however, that pipe buying is being done in a larger way, affecting both butt weld and lap weld tubes. More inquiry pervades the market, affecting both commodities. Strip steel demand has likewise been quickened.

There is more forward buying than at any time in several months, especially in sheets. If the current rate of activity maintains, several producers of sheets at Youngstown expect to be well booked in the next ten days for deliveries over the remainder of the year. From Nov. 4 until the end of last week, one maker booked enough tonnage for two weeks' operations, at a normal rate.

Producers of full finished sheets plan to take advantage of any quickened buying movement to advance prices above the current quotation of 4.60c. for No. 22

gage automobile body sheets. In this territory, the principal independent maker of highly finished sheets was loath to reduce the price on automobile stock from 4.75c. to 4.60c., or \$3 per ton, but was obliged to meet competitive conditions when the cut was instituted several weeks ago. There is naturally a strong inclination to restore the former price, on the part of producers.

St. Louis Water Works Will Use Steam

ST. LOUIS, Nov. 11.—The \$12,000,000 municipal waterworks being built for St. Louis on the Missouri River will be operated with steam made in the plant from coal, the Citizen's Supervisory Bond Issue Committee has decided. The committee rejected the proposal of the Union Electric Light & Power Co. to supply electricity.

Louis H. Egan, president of the Union company, contended that \$1,500,000 could be saved in construction of the waterworks if it were built for use of electricity, and pointed out other advantages. Water Commissioner Wall, who objected to the Union proposal, held that the saving in construction cost would be less than \$1,000,000, which would be more than offset by increased operating costs for electricity, and furthermore steampower was more dependable for unfailing operation of a vital utility.

The waterworks is being built under the \$87,500,000 bond issue adopted in 1923.

Fine Wire Prices Reduced

The American Steel & Wire Co. has announced Cleveland, Waukegan and Worcester bases on fine wire, which in the cases of annealed stone wire and tinned broom wire show steep price reductions. Stone wire now is quoted at 4c., base, Cleveland, 4.20c., base, f.o.b. Worcester and Waukegan and broom wire 6.00c., base, Cleveland and 6.20c., base, Waukegan and Worcester. These lines formerly were sold f.o.b. Pittsburgh and stone wire was quoted at 4.75c., base and broom wire at 7c., base. Weaving wire is unchanged except the base price of 9.25c. now is f.o.b. Cleveland instead of Pittsburgh. There has been no change in the extras, which were adopted last April.

Shipments of Locomotives

October shipments of locomotives were reported at 96 by the Department of Commerce, 78 being for domestic use and 18 for export. This compares with the total of 104 in September, of which 23 were for export, and with 310 in October of last year, of which only 15 were for export. For the ten months of 1924 to the end of October shipments aggregated 1190, of which 125 were for export. For the corresponding ten months of 1923 shipments aggregated 2561, of which 151 were for export. Unfilled orders at the end of October were 462, including 64 for export. This compares with 386 and 53 at the end of September, and with 977 and 62 at the end of October last year.

COMING MEETINGS

November

American Institute of Steel Construction. Nov. 13, 14, 15. Annual convention, French Lick Springs, French Lick, Ind. Charles F. Abbott, 350 Madison Avenue, New York, executive director.

Society of Naval Architects and Marine Engineers. Nov. 13 and 14. Annual convention, Engineering Societies Building, New York. Daniel H. Cox, 33 West Thirty-ninth Street, New York, secretary.

National Foundry Association. Nov. 19 and 20. Annual convention, Hotel Astor, New York. J. M. Taylor, 29 South La Salle Street, Chicago, secretary.

European Markets Much More Buoyant

British Feeling Improving—Continent Shows Strong Tone
—German Raw Steel Syndicate Formed—
Rail Mills Active

(By Cable)

LONDON, ENGLAND, Nov. 10.

Pig iron is strong on increased home demand and limited output. It is anticipated that additional blast furnaces will be restarted shortly. Export buying still languishes but the outlook is brighter. Hematite is firmer, with better sales both for home and for export. Philadelphia pipe founders have purchased Lincolnshire foundry iron.

Foreign ore has a better tone and there is more activity in the lower grades. Bilbao Rubio is held at about 21s. 6d. to 22s. (\$4.85 to \$5.08) ex-ship Tees. Germany has bought 200,000 tons of low-grade Spanish ore at 17s. (\$3.93) c.i.f. Rotterdam.

Steel domestic demand is more brisk, but for export generally demand is still poor. Bolckow, Vaughn & Co., Ltd., Middlesbrough, have secured an order for 24,000 tons of rails, etc., for West Africa.

Sheets and Tin Plate

Tin plate is steady but no large volume orders yet have appeared. Welsh tin plate works, although hungry for orders, declined to quote on 350,000 boxes of oil sizes for the Standard Oil Co. for shipment to the United States, Japan and South America. Further small arrivals have come here of Weirton Steel Co. tin plate. Welsh and German tin plate works are considering an arrangement regarding prices and export markets, especially for Central and Northern Europe.

Galvanized sheet merchants have bought a big tonnage at under £17 (3.51c. per lb.), f.o.b. Makers now are asking £17 5s. (3.56c.), f.o.b., for No. 24-gage corrugateds in bundles.

Black sheets are quiet, with no change in prices.

On the Continent of Europe

Continental markets are strong on heavy sales. Semi-finished iron and steel makers now are fully sold and hence no longer are keen sellers. Billets have been done at £6 10s. (\$30.03), delivered in the Midlands. Sheet bars are quoted up to £5 12s. 6d. (\$26), f.o.b.

A German raw steel union has been formed; 5 per cent of all steel works still dissent, but negotiations for their inclusion are pending. The German minister of labor is reported as about to propose the introduction of an 8-hr. day in the iron and steel works; the ironmasters are perturbed.

The Thyssen engineering shops, previously working on short time, now are operating in full. In the Sarre, the Roehling'sche Eisen und Stahl Werke, at Volklingen, has resumed production.

Belgium railroads have given orders amounting to 49,000 tons of rails to Belgian works, 18,000 tons to the Acieries Reunies de Burbach-Eich-Dudelange and 8000 tons to the Société Anonyme d'Ougrée-Marihay.

More Confident Tone in Pig Iron Market— British Iron and Steel Face Severe Continental Competition

LONDON, ENGLAND, Oct. 30.—At the moment of writing the country is in the throes of a general election and, while it would be unwise to predict any definite result, the course of events tends to show that the country is leaning toward the return of a Unionist Government. Various views are expressed, of course, as to what will be the ultimate result in respect to the iron and steel trades.

Certainly, however, there seems to be a more confident tone about and during the last few days pig iron

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.62 per £1, as follows:

Durham coke, del'd..	£1 5s.		\$5.78
Bilbao Rubio ore...	1 4		5.54
Cleveland No. 1 fdy..	4 6½	to £4 7s.	19.98 to \$20.10
Cleveland No. 3 fdy..	4 1½	to 4 2	18.83 to 18.94
Cleveland No. 4 fdy..	4 0½		18.60
Cleveland No. 4 forge	3 19½		18.37
Cleveland basic	4 0		18.48
East Coast mixed....	4 8½		20.44
East Coast hematite	4 19	to 5 0	22.87 to 23.10
(a) Ferromanganese..	13 10	and 13 10*	62.37 and 62.37*
Rails, 60 lb. and up..	8 10	to 9 0	39.27 to 41.58
Billets	7 10	to 8 5	34.65 to 38.12
Sheet and tin plate			
bars, Welsh	8 12½		39.85
Tin plates, base box..	1 3½		5.43
C. per Lb.			
Ship plates	9 0	to 9 10	1.86 to 1.96
Boiler plates	13 0	to 13 10	2.68 to 2.79
Tees	9 2½	to 9 12½	1.88 to 1.98
Channels	8 7½	to 8 17½	1.73 to 1.83
Beams	8 2½	to 8 12½	1.68 to 1.78
Round bars, ¾ to 3 in.	9 7½	to 9 17½	1.93 to 2.04
Galv. sheets, 24 gage	17 5		3.56
Black sheets, 24 gage	12 10		2.58
Black sheets, Japanese			
specifications	15 5		3.15
Steel hoops	10 15	and 12 10*	2.22 and 2.58*
Cold rolled steel strip,			
20 gage	16 0		3.30

*Export price.
†Ex-ship, Tees, nominal.
(a) Nominal.

Continental Prices, All F. O. B. Channel Ports (Nominal)

Foundry pig iron:			
Belgium	£3 14s.		\$17.10
France	3 14		17.10
Luxemburg	3 14		17.10
Basic pig iron:			
Belgium	3 11		16.40
France	3 11		16.40
Luxemburg	3 11		16.40
Billets:			
Belgium	5 10		25.41
France	5 10		25.41
Merchant bars:			
Belgium	6 0		1.24
Luxemburg	6 0		1.24
France	6 0		1.24
Joists (beams):			
Belgium	5 15		1.19
Luxemburg	5 15		1.19
France	5 15		1.19
Angles:			
Belgium	8 0	to £8 5s.	1.65 to \$1.70
¼-in. plates:			
Belgium	7 5		1.50
Germany	7 5		1.50
¾-in. ship plates:			
Luxemburg	7 5		1.50
Belgium	7 5		1.50

producers have reported a marked increase in the demand for their products, particularly for foundry grades; in one case it is reported that a works has sold its output for the next two months. On the other hand, there are still very large stocks of hematite, totaling on the northeast coast alone about 150,000 tons, which have to be disposed of, but this would quickly be absorbed in the event of any genuine revival.

No Change in Prices

General prices continue at about recent levels, with No. 3 Cleveland at £4 and East Coast mixed numbers at about £4 7s. There is no sign of any cheapening in costs and, until the manufacturers can get their prices down to more reasonable levels, they cannot hope to compete with foreigners, either at home or abroad.

All kinds of rumors have been set on foot as regards a European steel trust, but it is all talk and nothing else. It is difficult to see how such a combination could be worked under present conditions, but private negotiations among Continental manufacturers undoubtedly are taking place. Efforts are being made to revive the old Steel Rail Convention by French, Belgian

and Luxemburg producers, while German makers are endeavoring to establish a syndicate to control output only, though it is of course only a means toward raising prices.

Continental Price Competition

In our last report reference was made to various tenders put out by one of the Indian railroads, and various figures were given showing the difference between the British and foreign prices. The railroad in question, the Great Indian Peninsula, has again returned to the charge, and publishes particulars of tenders for locomotive boilers, disk wheels and axles. The tenders for the locomotive boilers ranged from £64,000, which was the lowest Continental, to £109,000, the highest British; for disk wheels and axles from £2,000 to £3,500, respectively. There were 12 British tenders for the locomotive boilers and 8 of these were over £100,000; 9 were from the Continent, of which 6 were less than £70,000. One British tender was apparently a special one, as the price was put at over £150,000. These figures show what British manufacturers have to contend with.

CONTINENTAL STEEL POOL

Ruhr and Lorraine Interests Getting Together— Rail Pool on Prices

(By Cable)

PARIS, FRANCE, Nov. 10.—A pool of rail makers, including Sweden with the German steel interests, and covering probably only price matters, seems likely to develop within the next few months.

Two or three French interests in the Sarre, through private arrangement, have effected reciprocal relations with some of the German interests in the Ruhr in connection with the interchange of Ruhr coke and French ore. A broad international understanding may thus develop.

[This arrangement was effected before the meeting on Nov. 5 of French and German officials for the purpose of working out a commercial treaty, under which it was expected that such a reciprocal arrangement would eventuate. It already has been denied that the steel trust which Belgian, French, Luxemburg, Swedish and German steel manufacturers had been invited to join would become an actuality. German statements alleging that such a combination was in process of formation have been categorically denied by the French interests named.—EDITOR.]

GERMANY TRIES COOPERATION

New Iron and Steel Syndicate Forming—Improvement in Iron Market

BERLIN, GERMANY, Oct. 25.—New negotiations, started to form a syndicate in the iron and steel industry, show that this problem has become acute, and about 90 per cent of the producers, including all the principal works, are in favor of it and in agreement with the proposals made for fixing definite contingents for production, in order to regulate supplies in accordance with demands. Even the opponents of the syndicate, as Thyssen and others, have been forced by the adverse economic conditions prevailing to abandon their antagonistic attitude. It seems that the new organization will not determine prices but mainly will fix contingents of production. The question whether sales are to be conducted by the syndicate or by the members will form one main point of difference in the negotiations, as most of the large works have extensive sales organizations. The formation of the raw steel syndicate probably will be followed by the reestablishment of syndicates in other lines of the iron industry and should largely assist the Belgian industrialists in their endeavor to form a European steel syndicate.

The favorable result of the German foreign loan has considerably assisted in the return of confidence

in the general improvement of trade in the near future. The reports of the probable formation of an iron and steel syndicate seem also to have influenced business in this line. During the last fortnight there has been a change in the German iron market and the works have booked substantial orders. Altogether, prospects in the iron industry look much brighter now than a short time ago. Generally the works are employed until the end of the year and at present six or eight weeks usually are asked for delivery. The railroad also is to place large orders during the next few days and reparation orders are expected from Serbia shortly. The increased demand has not influenced prices. They remained unchanged lately, ingots on the average being quoted at 92.50 m. (\$22.39) and bar iron at 112 m. (1.21c. per lb.) Some of the works which are booked for the next three months are reluctant in accepting orders at present prices.

Machine Tools and Hardware

In the machine tool trade the many outsiders who came into the business during the inflation are gradually dropping out, as the stocks of cheap tools which had been in the market are disappearing. As the possibility of price cutting is now diminished, a return to regular prices is noticeable all around. The manufacturers are trying to abolish the rebates which they were forced to allow up to now; there is a movement to eliminate intermediary traders and the firms are making endeavors to sell in all cases directly to consumers. This development is largely aided by the keen competition and the small margin of profit.

Conditions in the Solingen hardware and cutlery industry have constantly improved during the last four weeks and the number of unemployed is decreasing. The improvement is due not only to the optimistic tone prevailing in German industry generally but largely may be attributed to the raising of the customs barrier between the occupied and the unoccupied areas and to the reductions in prices. These reductions have not taken place to the extent that will be necessary to insure sufficient orders, especially for export. Foreign orders can be booked only for goods of first class quality; for inferior lines Solingen prices seem to be too high.

A new association of the German non-ferrous metal goods industry is being formed and a representative meeting at Nürnberg is drawing up the rules. The new organization includes manufacturers in all the lines of finished non-ferrous metal goods and it has been decided to associate closely with the manufacturers in the iron industry, to form a joint organization of the manufacturers of finished goods of both industries.

Austrian Iron Business Poor

Business in the Austrian iron industry is still slack. In Styria iron ore and pig iron production have been brought almost to a standstill and most of the open-

hearth furnaces have been blown out. During the summer large stocks had accumulated at the works and, owing to the stagnation in business, production had to be suspended. Trade in the steel industry is still quiet and the mills are encountering keen foreign competition and have to store part of their production. Even the Alpine Montan Gesellschaft has temporarily closed the greater part of its works.

Imports lately have been higher, while exports are decreasing. The engineering industry is better employed, but German competition is very strong in machine tools, textile machinery, etc. Manufacturers of rolling stock have booked some government orders for freight cars and the electric industry also is fairly well employed, while the automobile industry has few orders.

FRENCH INDUSTRY DEPRESSED

Iron and Steel Prices Low—Business Better in Semi-Finished Material

PARIS, FRANCE, Oct. 24.—The French iron and steel industry remains calm and depressed and consequently shows no improvement. Sterling fluctuations are quieter but the recent tension had no appreciable effect on transactions. French business circles are considering with some anxiety the project of application of new taxes by the Government, as to the repercussion these might have on trade.

Despite these unfavorable factors, prices have stopped declining. The revival of trade already witnessed in the United States for some weeks has not been felt in European markets.

Coke.—For the first 22 days of October, the ORCA supply of coke amounted to 204,845 tons, with a daily average of 9300 tons. The average is lower, both in harmony with our reduced requirements from lack of production, and from the application of the Dawes plan. Dating Oct. 1, the price of reparation coke is reduced by 7 fr. a ton to 138.25 fr. (\$6.66), delivered frontier station Sierck, or 143.75 fr. (\$6.92), ORCA charges included.

Iron Ore.—Lowering the price of ore to reduce the cost of iron and steel production was discussed at a meeting of ore producers held recently in Paris. But as ore is sold freely and does not exceed the requirements, the producers have decided to maintain their prices until further notice (22 fr. or \$1.06 for Briey ore of 35 per cent iron content and 26 fr., or \$1.25, for 38 to 39 per cent.)

Pig Iron.—With not much expansion in the volume of trade, prices are a little steadier, probably influenced by improved demand for export. Provisional figures for exports of pig iron in September showed an increase of 10,000 tons on August. Foundry iron No. 3 has been steady all week at 290 to 300 fr. (\$13.96 to \$14.44) and, exceptionally, under the lower price for large requirements.

The position of hematite is stronger, thanks to the rise of sterling; 400 fr. (\$19.25) a ton is a minimum, 405 to 410 fr. (\$19.50 to \$19.75) being mostly applied. For export, prices are also firmer at 330 Belgian fr. (303 French fr., or \$14.58); basic is maintained on the level of 70s. 6d., or 301 fr. (\$14.49).

Ferroalloys.—Little business is passing in French and British ferroalloys; Norwegian competition is still acute, the imports of these grades being 1000 tons in September as against 300 tons in August. On the free market, ferrosilicon stands at 815 fr. (\$39.25) for the 25 per cent grades; 1070 fr. (\$51.50) for the 45 per cent; against the unaltered prices of 850 and 1090 fr. (\$40.90 and \$52.50) quoted by the Comptoir. Ferrochromium (60 per cent Cr. and 8 per cent C.) is worth 1820 fr. or \$87.60 (Comptoir, 1890 fr. or \$91); ferro-tungsten, 80 to 85 per cent, 10.80 fr. per kilo of pure metal, or 23.6c. per lb., (Comptoir, 11.50 and 12 fr. per kilo, or 25.1c. and 26.2c. per lb.).

Semi-Finished Products.—There is a slight improvement in the orders of semi-finished products both at home and for export. Great Britain is purchasing billets. Prices remain low at 37 fr. (\$17.81) for ingots; 38 to 39 fr. (\$18.29 to \$18.77) for blooms; 40 to 42 fr.

(\$19.25 to \$20.22) for billets. The export rates in Belgian currency are 430 fr. (\$19.02) for blooms; 450 fr. (\$19.92) for billets; 475 fr. (\$21.04) for targets. For Great Britain, prices stand at £4 15s. to £4 17s. 6d. (\$19.64 to \$20.15) for blooms; £4 18s. 6d. to £5 (\$20.35 to \$20.65) for billets; £5 4s. to £5 5s. (\$21.45 to \$21.66) for targets.

Rolled Steels.—The market has been disorganized for about three weeks by a sharp decline in prices, varying from 40 to 50 fr. (\$2 to \$2.50) per ton in some cases. On the other hand, some plants are taking advantage of the situation to place orders. Owing to this, prices are a little more resistant and the limit of the fall has now been attained. Home competition is keen and purchasing is a matter of day to day covering. The average prices stand at 46 to 48 fr. (1c. to 1.05c. per lb.) for joists; 49 to 51 fr. (1.07c. to 1.11c.) for merchant steels; on this basis, the long-term offers made by some large concerns find no response from buyers, who cautiously hold back against the possibility of a revival which might prevent the plants from fulfilling their engagements. Delivery times are longer. A recent adjudication involved an order for 1520 tons of 20-kg. (40 lb. per yard) rails taken by a Meurthe-et-Moselle firm at 626 fr. (\$30.15) a ton, delivered Besançon. While export business is a shade better, due to the appreciation of sterling, prices remain weak, bars standing at £5 10s. (1.12c. per lb.) f.o.b. Antwerp.

Sheets.—This section is one of the best of the market, but prices still are inclined to ease. Heavy sheets are on the average of 70 fr. (1.53c. per lb.); medium, 85 to 90 fr. (1.86c. to 1.96c.); light sheets, 100 fr. (2.18c.), minimum. Recent tenders to the State railroads for 5-mm. sheets (No. 6½ gage) were made at 82.25 fr. per 100 kg. (1.80c. per lb.), by a firm of the Ardennes, 82.85 to 84.85 fr. (1.81c. to 1.85c.) from Meurthe-et-Moselle; 85 to 95 fr. (1.86c. to 2.07c.) from the North and 90 fr. (1.96c.) from the Center. The export rates are easier, the Germans offering heavy sheets at £6 2s. 6d. (1.25c.) ½-in. sheets, £7 to £7 2s. 6d. (1.42c. to 1.45c.) f.o.b. Bremen or Hamburg. Medium and light sheets are firmer at 650 fr. (1.42c.) for 3-mm. (No. 11½ gage); 740 fr. (1.62c.) for 2-mm. (No. 14 gage); 860 fr. (1.88c.) for 1.5-mm. (No. 16½ gage); 1025 fr. (2.24c.) for 1-mm. (No. 19½ gage); 1175 fr. (2.57c.) for ½-mm. (No. 25½ gage).

Wire Products.—From lack of confidence and while the requirements are large, the position of this market is dull and increasingly weak. The derivatives are also seriously affected by the decline in the price of wire rod, now barely holding 56 to 58 fr. (1.22c. to 1.27c.). Wire nails are unsteady at 100 fr. (2.18c. per lb.)

Dismissal of Complaint as to Pipe Rate Recommended

WASHINGTON, Nov. 11.—Rates on cast iron soil pipe, in carloads, from Somerville and Newark, N. J., to points in New England are not unreasonable, according to a tentative report of Examiner Morris H. Konigsberg, to the Interstate Commerce Commission. The report, made public yesterday, recommends dismissal of the complaint of the Somerville Iron Works, Somerville, which assailed the rates under attack and intervening in the case with the complainant were the Central Foundry Co. and the Essex Foundry, Newark. The rates attacked also apply from Baltimore, Md., Lansdale, Linfield and Boyertown, Pa. In attacking the rates the Somerville Iron Works referred to the rates on soil pipe from Birmingham, Ala., and Lynchburg, Va., to New England points, showing that from Birmingham there is a group or blanket rate of \$10.08 per ton, except to Bangor, Me., to which point the rate is \$12.49 per ton. From Lynchburg the rate to New England points listed is \$7.70 except to Bangor, which takes a rate of \$12.70. The rate from Somerville is 25.5c. per 100 lb., except to Bangor, taking a rate of 42.5c., while respective rates from Newark are 24c. and 42.5c. The examiner said: "The mere reference to these rates, however, without showing a similarity of traffic or transportation conditions is not sufficient to warrant a finding of unreasonableness."

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ESTABLISHED 1855

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Business Can Go Forward

THE wave of conservatism which swept the McDonald Government out of power in England engulfed radicalism in this country and the La Follette-Gompers-Socialistic-Communist forces, including all the shades of Reds and Pinks, were defeated nearly six to one. The misnamed Progressive party may have commanded 4,500,000 votes; the ballots cast for William Z. Foster were not worth counting, and the combined vote of Coolidge and Davis was more than 25,000,000. The election was not merely an overwhelming endorsement of President Coolidge and his sane policies; it was a tremendous protest against all socialistic doctrines.

The country is to be congratulated not only because conservative policies have won but also because the people of the United States, like those of England, have expressed a preference for strong, responsible parties and opposition to division of responsibility into blocs. While the Democratic party has not had the allegiance of manufacturers in large numbers, it has been useful in recent years in "the opposition benches" and such opposition is greatly to be preferred to the nagging, obstructive performances of blocs responsible to no party.

The political atmosphere has been cleared, but the good work will not be fairly begun until such radicals as La Follette and Wheeler are deprived of their positions of power in Senate committees. It certainly would be a betrayal of the people and a defiance of their mandate to tolerate La Follette as chairman of the highly important Committee on Manufactures and as second on the Committee on Finance which, with the possible exception of the Committee on Foreign Affairs, is the most important committee in the Senate. Neither the seniority rule, senatorial courtesy, nor any other excuse should be allowed to prevent the removal of La Follette and other Senators from positions in which they could continue to promote their destructive doctrines. Fortunately there are plenty of able Senators of both of the old parties to fill

the important positions which should be vacated.

Decisive as has been the expression of popular will, it would be a fatal error to conclude that the wave of conservatism means opposition to genuine progress in domestic policies or to all co-operation with other nations in solving political, social and industrial problems of the world. Standpatism would bring certain rebuke. There must be not only economy in government and prompt reduction and equalization of taxation, but also legislation that will promote the agricultural and industrial interests of the people; nor can this great nation fail to respond to any reasonable demand from foreign lands.

Furthermore, the conservatism that characterizes the political world is essential also in the business world. Now is the time for constructive thinking and wise action. The readjustment which has been in evidence in various lines of production this year has not ended, and not a little remains to be done in industries which have not been on a basis of profit for some months. Economy is still the watchword in public, corporate and individual expenditure. Time will be an essential factor in the development of the increased buying power that will be needed to make good the prophecy that 1925 is to be the most prosperous of the post-war years. By a large majority the people have voted that industry and trade shall go forward unafraid. Plans for constructive activities will now be free of the menace of small Congressional minorities that was so large a cause of the business reaction of last spring.

The people have repudiated decisively the proposal to turn over the country's railroads to politicians and the labor unions, and that repudiation has added vastly to the value of railroad securities in investors' hands. It has given new assurance, moreover, to the steel industry. With the buying power of the farmer community still increasing daily, the old steel trade tradition of large railroad buying in the year following a combination of good crops and high cereal prices is full of promise for 1925.

What We Escaped

POSTHUMOUS news of what we escaped at the election is contained in the November issue of the *American Federationist*, just out. The words are plain and concise. There can be no misconception.

In behalf, or in extenuation, of Senator La Follette's proposal to amend the Constitution so that Congress could enact a law which the courts had declared unconstitutional, some of his friends argued that the process of such re-enactment would be difficult and probably would occur only in case there were very strong popular sentiment in favor of the law that would thus override the Constitution. They also recounted the cases in which acts of Congress had been declared unconstitutional, found they were few in number, and in essence reached the conclusion that the matter "didn't amount to much."

Others, perhaps not friendly to the La Follette proposal, proceeded along a different line. They pointed out that we have a written Constitution, which controls, while most countries do not, but either make constitutional law as they go along or have their laws as their constitution. They concluded, then, that the change would be very revolutionary in character, and perhaps rash, but not exactly unreasonable. We should merely be changing from one system to another.

No doubt it will be granted that if Mr. La Follette had any chances of being elected those chances rested in very considerable part upon support by the American Federation of Labor. Beyond question, if he had been elected the American Federation of Labor would have been both prompt and assiduous in claiming the spoils of victory. Unless dead, Samuel Gompers would have been the spokesman.

Now we have in the *Federationist* issue, which has just appeared, an editorial with Mr. Gompers's name attached, which shows how utterly mistaken the views quoted above really were. Here are extracts:

There has been developing in this country a government by the courts. The courts have abolished the constitution. * * * The courts have abolished the constitutional protection of individuals and of minorities. Every reactionary candidate, including both Coolidge and Davis, the reactionary Bar Association and the corporation lawyers who serve as judges, have united in defense of government by the courts. They are attempting in a brazen and shameless manner to deceive the American people. They are making especially the impudent argument that the courts are the protectors of the Constitution and of the rights of individuals and minorities.

In other words, it was "impudent" for men to say that the La Follette proposal was merely revolutionary in providing that Congress should be empowered to add to the Constitution instead of the Constitution being left as it stands unless amended in the way the Constitution itself provides. Granting for argument the propriety of making this revolutionary change, the new constitutional law furnished by Congress would require interpretation and enforcement. To this Mr. Gompers would object strenuously when the time came. He says "the courts have set themselves up in the place of the Government" and

"the courts have overruled Congress." He has his phrases already coined. He would merely need to repeat.

In the light of the utterances which lead this issue of the *Federationist* and are signed by Mr. Gompers, the argument that was made in some quarters, that the Congressional method of constitution-making would not count for much because the courts have declared so few Congressional enactments unconstitutional, becomes utterly puerile, misleading and vacuous. A regular orgy of attempting to override Constitution, courts and everything would have been attempted by the blocs in Congress. We are given fresh evidence of how much we have escaped.

Better Steel Castings

MORE progress has been made in the heat treatment of steel castings in the past 15 to 20 years than in any other branch of the steel industry. Harking back only a few years one realizes how poor the annealing in steel foundries was. Large and small castings were grouped indiscriminately in an annealer and often there was no use of the pyrometer. As a consequence many tons of castings went into service without being made equal to the requirements. Today not only is simple annealing properly regulated, but for some time double heat treatment has been practiced, developing physical properties that formerly were not considered attainable. A further step in this progress was given attention at the foundrymen's convention at Milwaukee in October—triple annealing or heat treatment. This, when thoroughly understood and developed to the perfection of double heat treatment, promises to overcome many difficulties now involved in refining the grain of large steel castings. The high development of heat-treating processes has made possible also the production of alloy steel castings having properties equal to those of forgings. At the same convention some striking experiences in this connection were made public. These developments point to the placing of steel castings on a high plane and to their use in fields which thus far they have not entered.

Steel Output Since the War

SIX post-war years having passed, it is well to consider that the record of steel production in those six years means something. It may not be accurate to call the production "normal," a term which may be used closely or loosely. By the loose interpretation, the fact that six years are included in the average would be sufficient to make the average the normal. By a strict interpretation, the average could not possibly be considered normal for the simple and obvious reason that no one regards the times we have passed through since the Armistice as by any means normal, and one cannot expect normal steel production in abnormal times.

There are two factors that may be derived from the steel ingot output of these six years.

One is the average tonnage and the other is the average percentage of the capacity existing from time to time. As to ingot tonnage, we have the following production, the estimate for 1924 being on the assumption that the daily rate in November and December equals the average rate in September and October:

	Gross Tons
1919	33,694,795
1920	40,881,392
1921	19,224,084
1922	34,568,418
1923	43,485,665
1924	35,700,000
Annual average.....	34,592,000
Daily average.....	111,230

Thus the present year runs 3 per cent above the average, in point of tonnage, which is interesting in view of the fact that we have had both a record high rate this year and a rather low rate. Daily rates have been as follows thus far this year:

	Gross Tons Per Working Day
January	134,579
February	152,367
March	161,075
April	128,213
May	97,343
June	82,259
July	71,901
August	97,750
September	108,269
October	115,239

The highest rate was two and one-quarter times the lowest rate, while the October rate was a fraction of 1 per cent above the ten-month average, and 3 per cent above the six-year average.

The other basis for striking an average of ingot production in the six years is to relate production to capacity and obtain a percentage. Early this year THE IRON AGE estimated the actual productive capacity at 54,000,000 tons, and this factor has become very familiar. The trade is accustomed to the conception of steel ingot production being at this or that percentage of 54,000,000 tons.

This is not the nominal or rated capacity, which was given by the American Iron and Steel Institute statistics at 56,759,960 tons for Dec. 31, 1923. The 54,000,000 tons estimated actual capacity falls short of the nominal rated capacity by 4.86 per cent. These ratings have been given year by year, and assuming a slight increase for Dec. 31, 1924, the average rated capacity during the six years is about 55,194,000 tons. Deducting 4.86 per cent, we have 52,500,000 tons, which may be considered the average actual capacity for the six years. That is, one takes 52,500,000 tons for appraising the actual tonnage output of the six years in the same way that he takes 54,000,000 tons for appraising output rates at the present time.

By the 52,500,000 tons capacity standard, the actual tonnage output of the six years represents 65.9 per cent. It may be said, therefore, that since the war the steel industry as it existed from time to time has operated at an average of 66 per cent of its actual capacity. Last month it operated at 66.4 per cent of 54,000,000 tons capacity, and thus from September to October it passed above its six-year percentage average. The interesting question is how far the stimulus of the election result will carry the production curve above the six-year average line, which it has just crossed.

Increasing Output Per Man

A GOVERNMENT official in Washington who is particularly well posted on conditions abroad made the prediction, some weeks ago, that the renaissance of German industrial effort which must be the prelude to German reparations payments on a large scale will hurt England terribly. In particular he considered that the British steel industry was in for hard times, with the textile industry coming next.

In a late issue of the *Engineer* (London), a writer discusses the way in which his countrymen are not living up to their opportunities. Without mentioning the demoralizing effect of the dole system, he concludes his plaint with this:

Our railroad men, dockers, carters and others, all of whose wages add to our costs, may conservatively be put at 125 per cent above pre-war, for less work per man. British railroads in the last five years (comparing with the standard of 1913), have paid nearly 150 per cent more wages per man; they have employed 75,000 more men; they have carried 100,000,000 tons less traffic per year; they have paid very nearly 200 per cent more wages per unit of work performed. Need we wonder at loss of trade?

Fortunately, the same situation does not exist in the United States. We have had plenty of complaint from particular lines that labor costs were excessive. At times it has been charged that the laborer was not giving of his effort in the same degree as ten years ago. For the most part, however, the output per man is being maintained, though in some cases only at the cost of greater mechanical aid, and there are industries—automobile and rubber tire manufacture, for example—in which output per man has been increased greatly. It becomes more and more evident, as time goes on, that either the British workingman will have to take heed to his condition and put more energy into his work or British industry is doomed to very hard sledding in the years to come.

New Books Received

Henley's Twentieth Century Book of Recipes, Formulas and Processes—Edited by Gardner D. Hiscox. Pages 800, 6 x 8½ in. Published by the Norman W. Henley Publishing Co., 2 West Forty-fifth Street, New York. Price, \$4.

Eye Hazards in Industrial Occupation—By Louis Resnick and Lewis H. Carris. Pages 250, 6 x 9 in.; illustrations 60. Published by the National Committee for the Prevention of Blindness, Inc., 130 East Twenty-second Street, New York. Price, single copies, paper binding, \$1.50; flexible fabrikoid binding, \$2.50.

Reflecting the gradual but sustained improvement in operations of iron and steel properties in the Youngstown district since July are the payroll figures for October, showing a total wage distribution of \$6,217,513 by Youngstown industries. This represents a gain of \$124,595 over September and \$650,000 over July, the low month of the year. During the first ten months of this year, the aggregate payroll at Youngstown was \$63,696,575, comparing with a wage disbursement for the corresponding period in 1923 of \$64,315,698. Indications are that the 1924 payroll at Youngstown will be about \$2,000,000 less than last year, which represented the high mark since wartime wages were cut.

FABRICATED STEEL BUSINESS

Awards Exceed New Business—Accumulation of Pre-Election Business Placed

Post-election activity in structural projects was featured by heavy awards, as much of the accumulated tonnage that had been withheld until the passing of election was placed. Awards in the past week totaled close to 30,000 tons, and for the first time in a fortnight exceeded new business, which was only about 13,000 tons. Sentiment is good and fabricators seem to expect a continuation of activity.

Consolidated Gas Co., office building, 166th Street and Audubon Avenue, New York, 1000 tons to Levering & Garrigues Co.

Bisjo Realty Co., loft building West Thirty-eighth Street, New York, 1500 tons to A. E. Norton, Inc.

Brooklyn Times, William Kennedy Contracting Co., Brooklyn, 400 tons, to George A. Just Co.

City of New York, for subway in Brooklyn, 2700 tons, to American Bridge Co.

Pennsylvania Railroad, highway bridge at Trenton, N. J., 250 tons, to McClintic-Marshall Co.

Baltimore & Ohio Railroad, five bridges on Staten Island, New York, 550 tons to McClintic-Marshall Co.

Brooklyn Edison Co., sub-station in Brooklyn, N. Y., 600 tons, to Bethlehem Steel Co.

United States Cast Iron Pipe & Foundry Co., building at Burlington, N. J., 1700 tons, to American Bridge Co.

Franklin Savings Bank, Eighth Avenue and Forty-second Street, New York, 350 tons, to Levering & Garrigues Co.

Apartment house, 14 stories, 1171 Park Avenue, 1500 tons, to Hay Foundry & Iron Works.

Public schools Nos. 32 and 39, New York City, 500 tons each, to Harris Structural Steel Co.

Eitel Brothers, hotel, theater and office building, Chicago, 6470 tons, to Morava Construction Co.

Conventual Chapel for Sisters of Our Lady of Charity of the Good Shepherd, Chicago, 240 tons, to an unknown fabricator.

Opera Scenery & Repair Shops Co., Chicago, studio and storage building, 450 tons, to American Bridge Co.

Highway bridge over Platte River, Yutan, Neb., 704 tons, to Omaha Steel Works.

Mount Vernon Car Mfg. Co., Mount Vernon, Ill., foundry, 1850 tons, to McClintic-Marshall Co.

Masonic Temple, Waterloo, Iowa, 450 tons, to Rock Island Bridge & Iron Works.

Apartment house, Wellington Street and Sheridan Road, Chicago, 250 tons, to Duffin Iron Works.

Hotel Commodore, Chicago, 250 tons, to Gage Structural Steel Co.

Dixie Sand & Gravel Co., Chattanooga, Tenn., hull for dipper dredge, 175 tons, to Milwaukee Bridge Co.

University of Pittsburgh, stadium, 2100 tons, to McClintic-Marshall Co.

Bergman Hardware Co., new building, 160 tons, to R. S. McMannus Steel Construction Co.

Asbury Park, N. J., high school, job relet, 500 tons, to Kellogg Structural Steel Co.

Apartment house, 15 stories, at Ninety-fourth Street and Broadway, 2200 tons, to Harris Structural Steel Co.

New York Central Lines, two bridges, 300 tons, to Jones & Laughlin Steel Corporation.

Peerless Portland Cement Co., Detroit, manufacturing building and crane runway, 600 tons, to Fort Pitt Bridge Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

James McCutcheon & Co., store building, Fifth Avenue and Forty-ninth Street, New York, 2200 tons.

Schiff apartment house, 128 Central Park South, sizable tonnage.

Public schools Nos. 68 and 72, New York City, 500 tons each, bids being taken and public school No. 207, specifications to be issued.

Starrett Brothers, apartment house, Park Avenue and Sixtieth Street, New York, 1000 tons.

Columbia University, New York, building, 700 tons.

City of Baltimore, building for police headquarters, 3000 tons.

New Jersey State Highway Commission, highway bridge, 200 tons.

Department store, Hartford, Conn., 500 tons.

Narragansett Electric Light & Power Co., Providence, R. I., 300 tons, bids in.

Erie Railroad, bridge at Paterson, N. J., 1200 tons, bids in.

Coal plant, Providence, 1000 tons.

Dartmouth Street bridge, Boston, repairs, 425 tons.

F. W. Woolworth Co., store at Cincinnati, 100 tons, bids in.

New Holton Street viaduct at Milwaukee, 2000 tons; plans under way and bids probably asked Jan. 1. R. E. Stoelting, commissioner of public works.

Bourne Fuller Co., Cleveland, factory building, 600 tons, general contract awarded to H. K. Ferguson Co.

Albrecht Grocery Co., Akron, warehouse, 1000 tons.

Beals-McCarthy & Rogers, Buffalo, warehouse, 600 tons.

RAILROAD EQUIPMENT BUYING

Light Purchasing of Cars—Locomotive Orders Include Industrial Users

A slight increase in railroad purchasing is noted since election, a feature of the present activity being the building and repair of cars in the shops of the railroads. The list of repair work being done by the railroads in their own shops has been added to by the Baltimore & Ohio, which recently closed on about 16,000 tons of fabricated parts for the repair of 2000 cars. New inquiries for cars still lag, with only 500 reported, but awards in the past week were in excess of 5000. Locomotive orders were small and scattered, a few industrial users awarding business; inquiries totaled 15.

The Elgin, Joliet & Eastern is inquiring for 500 steel underframes.

The Southern Railway has closed on 1000 steel underframes with the Virginia Bridge & Iron Co.

The Great Northern has purchased 40 30-cu. yd. air dump cars from the Pressed Steel Car Co.

The Baltimore & Ohio has purchased about 16,000 tons of fabricated steel parts for the rebuilding of 2000 hopper cars in its own shops. It is expected that 6000 hopper cars in all will be repaired by the company.

The Conley Tank Line, Pittsburgh, has purchased 6 insulated 5050-gal. tank cars from the Standard Tank Car Co.

The Misko Refineries, Laredo, Tex., has closed on 2 triple compartment, 8050-gal. tank cars with the Standard Tank Car Co.

The Caddo Central Oil & Refining Co., New York, has purchased 1 8050-gal. tank car from the Standard Tank Car Co.

The Sun Co., Philadelphia, has closed on 7 compartment car tanks with the Standard Tank Car Co.

The Great Northern is in the market for 1000 steel underframes.

The Central Railroad of New Jersey has closed on 49 box cars of 40 tons capacity and one of 50 tons with the Standard Steel Car Co.

The South African Railways have issued a call for bids to be opened in London, Trafalgar Square, W. C. 2, Dec. 10, on 83 motor-coach steel underframes and 83 motor-coach bodies, wood or steel, exclusive of electrical equipment.

The Southern Railway has ordered 5 Pacific type locomotives from the American Locomotive Co.

The Hydraulic Press Brick Co. has purchased one 0-4-0 switching locomotive from the Baldwin Locomotive Works.

The Peoria-Pekin Union has ordered 3 switching locomotives from the Baldwin Locomotive Works.

The Gulf, Texas & Western, the Asherton & Gulf and the Sugar Land Railway have each ordered 1 gasoline motor car from the J. G. Brill Co.

The Santa Fe has awarded 1000 box cars to the Pullman Car & Mfg. Corporation and 500 refrigerator cars and 500 gondola cars to the American Car & Foundry Co.

The Norfolk & Western has placed 1000 57½-ton steel gondola cars each with the Ralston Steel Car Co., the Newport News Shipbuilding & Dry Dock Co. and the Pressed Steel Car Co.

The Burlington will repair 1000 gondola cars in its own shops.

The Central of Georgia is inquiring for 500 ventilated box cars, 5 coaches, 1 baggage and mail car and 10 underframes for caboose cars.

The Chicago & North Western will open bids Nov. 13 on 2200 freight cars.

The Terminal Railroad Association of St. Louis is inquiring for 15 switching locomotives.

Iron and Steel Markets

BUSINESS STIMULATED

Post-Election Activity Greatest at Chicago—Effort to Raise Prices

Pig Iron Movement Exceeds 600,000 Tons and Market Tends Upward

The election result has stimulated iron and steel markets, and views of the future are uniformly optimistic. No rush of buying was looked for and none came, but there is greater activity and it is more marked in the Chicago district than elsewhere. In pig iron the movement well under way before Nov. 4 has broadened and total sales are put at 600,000 tons. With inventory so near, buying of finished steel for this year is well calculated, but there is a lively interest in requirements for the first quarter of 1925. Apparently a large business could be done at recent low levels, but most producers ask \$2 to \$3 a ton higher, and prices are thus the crux of the situation.

The Steel Corporation three weeks ago began quoting a \$2 advance on bars, plates and shapes. Meanwhile, considerable business has gone to independent companies at the old prices. The Pennsylvania Railroad has bought 9000 tons of plates from six independent makers in Pennsylvania, all at 1.65c. at mill. It placed 2000 tons of steel bars at 1.90c., Pittsburgh, the Carnegie Steel Co. asking 2c.

Following these plate sales, a central Pennsylvania mill advanced its price to 1.80c., Pittsburgh, and several eastern mills followed suit. In the Middle West weakness continues.

A stabilizing effort is seen in the sheet market, advances of \$2 to \$3 a ton being asked for early 1925. Automobile interests are trying to put through first quarter sheet contracts at the early delivery price, but mills are holding out. Meanwhile prompt sheets still show irregularity.

The Steel Corporation's October gain of 51,000 tons in unfilled orders reflects the decline in buying just before election, the increased output of October, and also the loss of business in the effort to advance prices.

The country's steel ingot output in October at 3,111,000 tons was 6½ per cent greater in daily rate than that of September, operations averaging 66.4 per cent of capacity. For November an increase over the October rate is indicated.

The Chicago steel market has been rather more active since the election than those of Pennsylvania and the Central West. A leading producer there of bars, plates, shapes and rails reports the largest week's bookings in those products in two years. Local capacity on bars is sold to the end of the year.

With the Chicago estimate that cars ordered for this year will run up to 150,000 is the prediction of 200,000 for 1925 in view of extension plans now made possible. The past week's awards were 5000, and the B. & O. has closed for 16,000 tons of steel for the repair of 2000 cars. Rail sales of the week were 40,000 tons.

Structural awards have increased, running up to 30,000 tons for the week. Competition is sharp,

as appears in bids of \$67 for fabricated steel delivered at the site.

The latest development in steel basing is the placing of Duluth prices for wire products on a parity with those of Chicago district mills, that is, at \$2 a ton higher than at Cleveland and Pittsburgh. Originally Duluth prices were \$4 a ton higher.

Sales of pig iron just before and just after election have been very large—200,000 tons at Chicago, 150,000 tons at Cleveland, 60,000 tons at Birmingham, 50,000 tons each at Buffalo and New York, 30,000 tons at Cincinnati, 20,000 tons at Pittsburgh and amounts at St. Louis, Detroit and other cities sufficient to make the grand total considerably over 600,000 tons. Most of this iron is for delivery in the first quarter of next year. Basic, foundry and malleable iron prices have been put up 50c. at Chicago and Bessemer has advanced \$1 at Pittsburgh, but as a rule the heavy buying has not lifted prices.

More cheerful reports came this week from European steel markets. British pig iron and steel demand is better and there is talk of restarting blast furnaces. Welsh and German tin plate makers are talking of an agreement on prices in central and northern Europe.

England has sold 24,000 tons of rails to West Africa and Belgian railroads have bought 75,000 tons from domestic mills. Continental markets are strong on heavy sales. The German "raw steel" union has been formed, taking in 95 per cent of capacity, but a disturbing factor is the labor minister's proposal to restore the 8-hr. day at iron and steel works.

Meanwhile representatives of the Stinnes and Thyssen groups are in the United States studying the prospects for marketing steel here.

Pig iron has advanced to \$19.54 per ton this week, according to THE IRON AGE composite price. This is the highest figure since the end of June, while last week's at \$19.21 was the lowest in more than 30 months.

Finished steel has advanced slightly to 2.474c. per lb., from 2.460c. last week, according to THE IRON AGE composite price. It now is \$6 per net ton above the figure of one year ago.

Pittsburgh

Sentiment Extremely Cheerful—Orders Not Coming with a Rush

PITTSBURGH, Nov. 11.—Few of the steel trade in this and adjacent districts expected the election to be followed by a rush of business and consequently few were disappointed. The result of the election was what most of the trade had expected and hoped for, and while there has been some releasing of orders that were held up pending the election and strings were severed on some business placed on condition that the election turn out as it did, it must be said that the reaction is seen more in optimistic expressions than in the volume of business that has come out since Nov. 4. The fact that the inventory season is so close at hand is a factor of considerable importance, so far as purchases for shipment over the remainder of the year are

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 11, 1924	Nov. 4, 1924	Oct. 7, 1924	Nov. 13, 1923
No. 2X, Philadelphia...	\$21.76	\$21.76	\$21.76	\$22.64
No. 2, Valley Furnace...	19.00	19.00	19.50	22.00
No. 2, Southern, Cin'ti...	21.55	21.55	21.55	23.05
No. 2, Birmingham, Ala.†	17.50	17.50	17.50	19.00
No. 2, foundry, Chicago*	21.00	20.50	20.50	22.50
Basic, del'd, eastern Pa...	20.00	20.00	20.00	23.00
Basic, Valley furnace...	19.00	18.50	19.00	20.50
Valley Bessemer, del. P'gh	22.26	21.26	21.76	24.76
Malleable, Chicago*	21.00	20.50	20.50	22.50
Malleable, Valley	19.50	19.50	19.50	20.00
Gray forge, Pittsburgh...	20.26	20.26	20.76	23.26
L. S. charcoal, Chicago...	29.04	29.04	29.04	28.15
Ferromanganese, furnace	100.00	95.00	95.00	110.00

Rails, Billets, Etc., Per Gross Ton:

O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh...	35.50	35.50	36.00	40.00
O.-h. billets, Pittsburgh...	35.50	35.50	36.00	40.00
O.-h. sheet bars, P'gh...	37.00	37.00	37.00	42.50
Forging billets, base, P'gh	40.50	40.50	42.00	45.00
O.-h. billets, Phila...	41.17	41.17	41.17	45.17
Wire rods, Pittsburgh...	45.00	45.00	46.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	1.90	1.90	2.00	2.40
Light rails at mill...	1.80	1.80	1.85	2.25

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.32	2.32	2.32	2.67
Iron bars, Chicago...	2.10	2.10	2.10	2.40
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.40
Steel bars, Chicago...	2.00	2.00	2.00	2.50
Steel bars, New York...	2.34	2.34	2.34	2.74
Tank plates, Pittsburgh...	1.80	1.80	1.80	2.50
Tank plates, Chicago...	2.10	2.10	2.00	2.60
Tank plates, New York...	1.94	1.94	1.94	2.74
Beams, Pittsburgh	2.00	1.90	2.00	2.50
Beams, Chicago...	2.10	2.10	2.00	2.60
Beams, New York...	2.14	2.14	2.24	2.74
Steel hoops, Pittsburgh...	2.50	2.50	2.50	3.15

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

Sheets, Nails and Wire,	Nov. 11, 1924	Nov. 4, 1924	Oct. 7, 1924	Nov. 13, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.50	3.75
Sheets, black, No. 28, Chi-				
cago dist. mill...	3.60	3.60	4.60	...
Sheets, galv., No. 28, P'gh.	4.60	4.60	2.70	5.00
Sheets, galv., No. 28, Chi-				
cago dist. mill...	4.70	4.70	3.60	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	4.70	3.00
Sheets, blue, 9 & 10, Chi-				
cago dist. mill...	2.80	2.80	2.80	...
Wire nails, Pittsburgh...	2.75	2.75	2.75	3.00
Wire nails, Chicago dist.				
mill	2.85	2.85	2.50	...
Plain wire, Pittsburgh...	2.50	2.50	3.45	2.75
Plain wire, Chicago dist.				
mill	2.60	2.60	2.85	...
Barbed wire, galv., P'gh...	3.45	3.45	2.60	3.80
Barbed wire, galv., Chicago				
dist. mill	3.55	3.55	3.55	...
Tin plate, 100 lb. box, P'gh.	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago...	\$18.50	\$18.00	\$18.00	\$17.50
Carwheels, Philadelphia...	17.50	17.50	17.50	17.50
Heavy steel scrap, P'gh...	10.50	19.00	18.00	18.00
Heavy steel scrap, Phila...	17.00	17.00	17.00	15.00
Heavy steel scrap, Ch'go...	17.25	16.50	16.00	14.00
No. 1 cast, Pittsburgh...	18.00	18.00	18.00	18.50
No. 1 cast, Philadelphia...	17.50	17.50	17.50	19.00
No. 1 cast, Ch'go (net ton)	18.00	17.50	17.50	18.00
No. 1 RR. wrot. Phila...	18.00	18.00	18.50	17.00
No. 1 RR. wrot. Ch'go (net)	15.50	15.00	14.50	12.50

Coke, Connellsville:

Per Net Ton at Oven:				
Furnace coke, prompt...	\$3.00	\$3.00	\$3.00	\$3.75
Foundry coke, prompt...	4.00	4.00	4.00	4.75

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	13.87 1/2	13.50	13.12 1/2	13.50
Electrolytic copper, refinery	13.62 1/2	13.37 1/2	12.75	13.25
Zinc, St. Louis...	6.72 1/2	6.55	6.20	6.45
Zinc, New York...	7.07 1/2	6.90	6.55	6.80
Lead, St. Louis...	8.87 1/2	8.87 1/2	7.82 1/2	6.55
Lead, New York...	8.90	8.90	8.00	6.85
Tin (Straits), New York...	54.37 1/2	53.50	49.62 1/2	44.37 1/2
Antimony (Asiatic), N. Y.	14.00	12.00	11.00	9.25

THE IRON AGE Composite Prices

Nov. 11, 1924, Finished Steel, 2.474c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	{	Nov. 3, 1924, 2.460c.
	{	Oct. 14, 1924, 2.460c.
	{	Nov. 13, 1923, 2.775c.
	{	10-year pre-war average, 1.689c.

Nov. 11, 1924, Pig Iron, \$19.54 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	{	Nov. 3, 1924, \$19.21
	{	Oct. 14, 1924, 19.46
	{	Nov. 13, 1923, 20.94
	{	10-year pre-war average, 15.72

2024 to Date	1923
High	High
2.789c., Jan. 15.....	2.624c., April 24.....
Low	Low
2.288c., Feb. 26.....	2.446c., Jan. 2
	\$19.21, July 8.....
	Finished Steel.....
	Pig Iron.....
	\$30.86, March 20.....
	\$20.77, Nov. 20

concerned. There is, however, a lively interest in early 1925 requirements and there is little question that much business of this sort might have been booked if producers were willing to enter it at today's prices.

Steel manufacturers believe that these prices are too low and are figuring that the present situation is one that affords an opportunity to put the market back upon a profitable level. Two or three of the independent manufacturers of sheets have announced increases of from \$2 to \$3 a ton and there is an impression that a general advance in sheet prices is close at hand. The leading producer has turned down considerable first quarter in 1925 business which was tendered at today's prices. Suggestions are heard of higher

prices on plates at no distant date; makers lack business for early rolling and this accounts largely for prices below 1.80c., base, Pittsburgh mills.

The recent drop in pig iron prices which carried the market to the lowest levels of the year, coupled with the favorable outcome of the Presidential election, has materially stimulated the demand and given producers much stronger price ideas.

There is still a very firm tone to the scrap market, particularly on the open-hearth grade, but seeing that only two mills in the district are buying and they are taking only small tonnages, the faith of dealers in the future is no small factor in the strength of prices. Steel works in this and nearby districts are no more

fully engaged this week than they were last and unless there is a decided increase in the next 30 days or so, the opinion is expressed that scrap is quite high enough, especially as really good material is commanding as much as pig iron, figured on a delivered price basis.

While sentiment in iron and steel circles is extremely cheerful these days, it cannot be said that fundamental conditions have changed greatly in the past week. A change of administration at Washington probably would have necessitated some recharting of business plans which now is obviated by the continuation of the present administration for the next four years. This, of course, means that a delay in a revival in business is avoided, but the fact remains that the steel industry has capacity for a good deal more business than now is being done; labor supplies are ample and there is a high average of efficiency among the workmen, while additions to the rolling stock of the railroads insured good delivery service. A factor in the demand, however, is the probability of higher prices. The evidence has been made public that most companies have lost money at the prices which have recently prevailed and there is not much inclination on the part of consumers to question the justice of somewhat higher levels than now are current. The consensus of opinion is that a good business is ahead, with prices gradually growing stronger, but the idea that boom times are near at hand finds few subscribers. Incidentally the prospect for good times is so bright that not much talk now is heard about the mergers so freely discussed a short time ago.

Pig Iron.—This market has finally begun to swing into step with outside markets in point of activity. Fully 20,000 tons of foundry iron have been sold in the past week and there are pending inquiries for approximately 40,000 tons. Most of the business, both actual and prospective, is for first quarter 1925 shipment. A good deal of the iron placed carries a price of \$19, Valley furnace, for No. 2 grade, but some of the tonnage was placed at \$19.50, Valley furnace, and the common asking price of all producers now is \$19.50, with some quoting \$20. The Standard Sanitary and Mfg. Co. has put out an inquiry for its first quarter requirements which, although not definitely stated, are believed to amount to about 30,000 tons, or 10,000 tons for each of the three plants of this interest. Westinghouse Electric & Mfg. Co. also has entered the market for about 10,000 tons for its local and Cleveland units. Smaller tonnages are being sought by the radiator companies and manufacturers of sanitary goods. Following the recent sale of Bessemer iron at \$19.50, Valley furnace, the market has advanced a full dollar a ton. There was one sale of this grade of 1000 tons at \$20.50, Valley furnace, and another of 500 tons at the same figure. There was only one merchant producer who has any Bessemer for sale and this company is quoting \$20.50. Steel companies having any of this grade available want \$21, furnace. Basic grade appears to have advanced to \$19, Valley furnace, on sales to users in the Valley district. Most recent sales in the Pittsburgh district were to the sheet makers amounting to about 10,000 tons at \$18.50, Valley furnace. We note one sale of 1000 tons of malleable iron at \$19.50, Valley furnace, and a fair-sized amount of Northern charcoal iron has been placed for first quarter shipment at \$26, base, furnace. The Carnegie Steel Co. has put on a stack at Mingo, Ohio, and now has 33 of 58 furnaces in production. This is the only change of the past week in the blast furnace line up.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$19.00 to \$19.50
Bessemer	20.50 to 21.00
Gray forge	18.50 to 19.50
No. 2 foundry	19.00 to 20.00
No. 3 foundry	18.50 to 19.50
Malleable	19.50
Low phosphorus, copper free....	28.00 to 29.00

Ferroalloys.—While little, if any, ferromanganese is moving at \$100, furnace, or seaboard, the current

quotation of both domestic and British makers, it is doubtful now whether any can be had at less than that price. Rise in sterling rates has strengthened the British price, while a contributory factor in the firmness of the market is that the price war among British makers appears to have been settled. There are intimations that the Norwegian electric furnace ferromanganese is cutting into the continental sales of British producers and that this may result in the release of more British material for shipment to this side of the water. There is not much demand locally for ferromanganese, but it is the testimony of buyers that offerings at less than \$100 have disappeared. From a selling source comes the report that the maker of 50 per cent ferrosilicon, who recently named a price of \$70 delivered, has gone to \$73.50, but buyers report having been offered the material within the past few days at \$70. There was one sale of five tons of this material at \$65, delivered. A steady demand is observed for spiegeleisen at unchanged prices. Prices are given on page 1315.

Semi-Finished Steel.—There is not much activity in this market. Non-integrated steel companies appear to be amply covered against their requirements over the remainder of this year and negotiations for early 1925 tonnages have not yet started in an active way. Producers seem to have an idea that they will not have to sell for less money by waiting and consumers believe they will not lose by holding off. There is a firmer tendency in finished steel prices and it may possibly turn out that present prices will hold, since the chief argument for lower semi-finished steel prices is that they have not declined in proportion to the finished products. The common quotations still are \$35.50, Pittsburgh or Youngstown, for large billets and slabs and \$37 for sheet bars and small billets. There is still a quotation of \$46, base, on wire rods, Pittsburgh, Youngstown and Cleveland, but so far as sales are concerned, \$45, Pittsburgh, appears to be the prevailing figure. There is almost no open market activity in skelp, which still is quoted at 1.90c. to 2c. Steel works activities in this and nearby district still are averaging about 60 per cent of capacity. Prices are given on page 1315.

Iron and Steel Bars.—Local mills have fairly good order books in steel bars and while much of the tonnage was taken at 1.90c., base, Pittsburgh, there is no tendency now to go below 2c. The test of the market will come when buyers have exhausted their lower-priced purchases. The Jones & Laughlin Steel Corporation has two of its bar mills booked solidly to the end of the year and the position of other independents and of the Steel Corporation mills also is good. Fairly active demand is noted for iron bars, with recent prices well maintained. Prices are given on page 1314.

Structural Material.—Leading producers in this district now are quoting 2c., base, on large structural shapes rather firmly. They took considerable tonnage and gave protections on much business at 1.90c., but the indications are that much of the tonnage booked or spoken for will be required in the projects now in sight and the tendency of the mills now is to move toward more remunerative prices on new business. A stadium for the University of Pittsburgh will take 2200 tons of structural steel, while a number of bridges over the rivers in Pittsburgh and nearby will require a large tonnage. The favorable result of the election is generally expected to carry forward a good many industrial extensions which have long been on paper. Plain material prices are given on page 1314.

Plates.—Local mills have not yet begun to feel the benefit of the railroad car business placed since the fore part of September and still need orders for early delivery to maintain a semblance of a rolling schedule. Prices reflect that condition. When the car steel is specified, the mills will be busier and there will not be so much competition for orders. Higher prices are talked of. The basis is not orders, but rather the fact that prices are below costs, while the advance in Chicago encourages thoughts of higher prices here. Prices are given on page 1314.

Wire Products.—Sentimentally the situation is better, but actually, trading conditions are much as they have been for the past few weeks. With the inventory season only a few weeks away, there is not much inclination on the part of either jobbers or manufacturing consumers to exceed in purchases their real requirements. Some business held up just before the election has been released, but such orders have not added appreciably to the volume of business. It is believed some jobbers would place their first quarter requirements at today's prices, but while mills will take 90-day contracts, they are not yet disposed to take such contracts for deliveries starting Jan. 1. Unfamiliarity with freight rates still is reflected in price irregularity and some weakness when mills in this district seek business at distant points. Local mills are pulling out of destinations where the freight absorption is so great that unprofitable prices are entailed. Coated nails still are weak because the competition for business is so keen. Locally, the effort is to obtain \$2.10, base, per count keg, but there have been prices in outside markets which worked back to \$1.90 here. Prices are given on page 1314.

Rails and Track Equipment.—Inquiry is reported better in spikes and other track accessories and there has been a slight gain in actual business. While the Louisville & Nashville Railway order for spikes came to a Pittsburgh maker at \$2.60, base, per 100 lb., that quotation has not become a general one, makers as a rule still holding to \$2.70. Only a limited demand is noted for light rails. Billet rails are priced from 1.80c. to 1.90c., base, but the lower figure is the ruling one even on single carloads. Prices are given on page 1314.

Tubular Goods.—Demand for merchant pipe holds up well and makers report a better inquiry for oil well goods, although there has not been any appreciable gain in the orders for the latter class of pipe. Pipe makers are heartened by the fact that refineries in some of the important Western and Southwestern fields are taking all offerings of oil and expect this to mean an early increase in drilling and in the demand for well goods, since oil country jobbers are believed to have pretty slim stocks. Despite a slightly better demand and somewhat firmer prices, the boiler tube situation still is unsatisfactory to producers. Pipe makers in this and nearby districts are running about 60 per cent of capacity, with the best operation still noted in the butt weld furnaces. Several fair-sized pipe line inquiries have lately come out. The Sinclair Oil Corporation is in the market for 24 miles of 4-in. pipe for a line from South Electra to South Vernon, Tex., the Texas Line Pipe Co. for 20 miles of 6-in. from Electra to South Vernon, the Waggoner Refining Co. for 20 miles of 4-in. from Electra to South Vernon and the Humble Pipe Line Co. for 52 miles of 4-in. and 6-in. for a line from Swastika to South Archer, Tex. Discounts are given on page 1314.

Cold-Finished Steel Bars and Shafting.—Actual business has not increased materially in the past week, but the market feels the stimulus of the favorable outcome of the Presidential election and there is more interest in future requirements than was true recently. The inventory season is too close for really big purchases for shipment over the remainder of the year, but jobbers and consumers have indicated some interest in their early 1925 requirements. Prices here still are on a base of 2.70c., Pittsburgh, with freight equalized with outside producing mills when necessary. Ground shafting still is quoted at 8.10c., base, f.o.b. mill.

Bolts, Nuts and Rivets.—Bolt and nut quotations are well maintained and makers here are getting a fairly good run of specifications against fourth quarter contracts at the full prices. On rivets, the situation is not as strong as on bolts and nuts and while the common quotation of local makers on heavy rivets is \$2.60, base, per 100 lb., they cannot go west toward Cleveland at that price, as the leading Cleveland producer has set up that price f.o.b. Cleveland. This means equalizing of freight for Pittsburgh district makers to ship into the Cleveland district. Discounts and prices are given on page 1316.

Sheets.—Two or three of the independent sheet producers have announced higher prices, the advances ranging from \$2 to \$3 a ton. This change carries the quotations of these companies to 3.65c., base, for black, 4.70c., base, for galvanized, 2.70c., base, for blue annealed and 4.75c. for automobile body sheets, these prices being f.o.b. Pittsburgh, or f.o.b. mill, with freight equalized with Pittsburgh. Although not given out as such, it is believed that these are for first quarter tonnages, as consumers are pretty well covered for the remainder of this year. It is expected that other independent companies will advance prices soon and the fact that the leading interest refusing business carrying delivery beyond Dec. 31 at today's prices is taken to mean that this company will name higher prices on first quarter business. A good deal of business held up pending election has been released since Nov. 5, and it is reported that a good deal of first quarter business could have been booked if producers were willing to take it at today's prices. The sheet industry as a whole is operating this week at about 70 per cent of capacity. Prices are given on page 1314.

Tin Plate.—Business still waits on an announcement by the American Sheet & Tin Plate Co. of its prices for the first half of the year. Although sheet bars are about \$5 a ton cheaper than when the present base of \$5.50 per base box, Pittsburgh, was announced and there has been some decrease in labor costs, an advance in pig tin more than offsets these savings and it is estimated that costs are about 10c. per base box above where they were when the present price was established. The common expectation is that the present base of \$5.50 at Pittsburgh will be continued, but that the price at Chicago will be raised to \$5.75, delivered.

Rolled Flats.—There is a firmer tone to the market. While material 9 in. and wider, which is subject to competition from sheets and skelp, is still selling at low prices, a number of manufacturers are very firm at 2.50c. for hoops and 2.40c. for bands and strips less than 9 in. in width. Current demand is not heavy, but producers are looking forward hopefully to the first quarter of 1925. Prices are given on page 1314.

Cold-Rolled Strips.—The market is firmly pegged at 4c. base, Pittsburgh, and a very fair amount of business is coming to makers at that figure. This price is regarded as low by makers here and there are intimations of an advance when books are opened for first quarter tonnages.

Coke and Coal.—Negotiations have been opened for the requirements of several blast furnaces running on beehive oven coke for the first quarter of 1925, but not much progress has been made because producers insist on a wage clause in the contract. Pig iron producers claim that in the event that independent Connellsville operators have to raise wages to the Frick scale, it would mean an increase in the cost of the coke from 60c. to \$1 a ton, while sales of iron for first quarter delivery would be at a stated price. Another factor that is holding up the deals is that the blast furnace operators believe they should get coke at about \$3 per net ton at ovens while producers are talking \$3.25 to \$3.50. Spot furnace coke holds at \$3 to \$3.10. Foundry grade seems to be in somewhat better demand, but supplies are ample and prices easy. The Lake season on coal is practically at an end and this has held its effect upon business, and while prices are no lower than they were a week ago, the tone of the market is weak. Prices are given on page 1315.

Old Material.—Open-hearth grades of scrap are strong, but no considerable activity is noted following the election, which dealers expected would drive the mills into the market for big tonnages. Heavy melting steel has sold at \$19.50 for Midland, Pa., delivery, at \$19.50 and \$20 for Steubenville delivery and at \$20 for Warren, Ohio, delivery, but no large tonnages are involved in any of these cases. Marked strength also is noted in machine shop turnings, which have sold at \$15.50, delivered at Brackenridge, Pa., and seem headed

(Concluded on page 1312)

Chicago

Sales of Pig Iron Amount to 200,000 Tons— Finished Materials Also Active

CHICAGO, Nov. 11.—The past week has been marked by unusual activity in the pig iron and finished steel markets. The buying movement in pig iron, which began about two weeks ago, yielded orders totaling fully 200,000 tons. Demand for bars, shapes and plates and rails has also been a feature; in fact, a leading producer of those products has booked the heaviest week's business in more than two years.

Jobbers, structural fabricators, tank builders, concrete bar dealers and manufacturing users bought liberally for stock. Some of the largest tonnages brought out last minute concessions as indicated by the fact that as low as 1.85c. was done on a large order for bars. The market now, however, has every characteristic of firmness and this is not surprising in view of the large backlogs accumulated by the mills. Local capacity is sold out on bars until the close of the year and forward commitments in shapes and plates, while not yet that heavy, are large. Railroad buying is also an important factor in the situation. Local mills have booked additional orders for nearly 40,000 tons of rails during the week and at the same time continue to receive business from the car builders. The Santa Fe has placed orders for 2000 freight cars and the North Western will open bids this week on its inquiry for 3200 cars.

The trade is confident that freight equipment orders for the year will reach a total of fully 150,000 cars, and it is said that the plans of the carriers for 1925 insure the placing of 200,000 cars for that year.

Demand for steel pipe, sheets and wire products has also been stimulated as an outcome of the election, although not in the same degree as the heavier forms of finished products. The most important new development in wire and wire products has been the establishment of base prices at Duluth equal to those of the Chicago district mills, namely \$2 a ton above the prices at Cleveland and Pittsburgh. The Duluth prices first announced following the abandonment of Pittsburgh plus were \$4 higher than the Cleveland and Pittsburgh quotations.

Steel works operations continue to improve, the leading interest being on a 68 per cent basis, while the foremost independent is maintaining an 80 per cent rate. Blast furnace output is unchanged with 18 steel plant stacks active out of a total of 34 in the district. The Wisconsin Steel Works, however, contemplates blowing in its idle furnace this week.

Prices are stronger and further advances are looked for.

Pig iron has gone up 50c. a ton and while finished steel is unchanged as compared with a week ago, another advance in plates, shapes and bars is regarded as an early possibility.

Pig Iron.—The buying movement which began two weeks ago has yielded a total of fully 200,000 tons in orders. The majority of the larger buyers have at least bought conservatively for first quarter and a few of them have closed for their entire estimated requirements. One local consumer alone is reported to have closed for 40,000 tons. An important manufacturer of sanitary ware has placed orders for 12,000 tons of foundry and another user in the same general classification has closed for 3500 tons of foundry and 1500 tons of malleable. There have been numerous purchases ranging from 500 tons to 2000 and 3000 tons. It develops that some of the larger tonnages placed early in the buying movement brought out concessions and that was particularly true of iron for shipment to outlying points where the competition of other producing centers had to be met. Furnaces are now well fortified

with backlogs, however, and have advanced prices to \$21, base Chicago stack, for both the current and first quarters. As is to be expected, the first reaction to this advance has been a slowing down of buying. The price has been established, however, by a number of substantial sales, including one of 500 tons of foundry for delivery to a northern Illinois melter. Shipments from furnaces continue to increase and are now more than double what they were during the period of low production three months ago.

Further additions to active capacity will soon be necessary. It is planned to start a Federal stack about Dec. 1, but at the rate business is now developing it may be necessary to blow it in sooner. A steel works stack which has produced considerable merchant iron is also expected to go in shortly, possibly during the current week. Sales of Southern iron for both barge and rail and all rail delivery have involved relatively small tonnages. Southern prices are unchanged. Low phosphorus has been active, two Wisconsin melters having bought 1000 tons and 500 tons respectively and a local user 500 tons. Electric ferrosilicon, 14 to 16 per cent, has declined 50c. to \$42.42, delivered. Aside from the recent advance of local irons, the silicon differential for foundry iron, 2.75 to 3.25 per cent silicon, has been increased from 50c. to \$1 above No. 1 foundry, making it \$1.50 higher than the base grade.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
Basic	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago ..	29.04
Southern No. 2 (barge and rail) ..	22.18
Southern No. 2, sil. 1.75 to 2.25, \$23.51 to ..	24.01
Low phos., sil. 1 to 2 per cent, copper free	32.50
Silvery, sil. 8 per cent.	34.29
Electric ferrosilicon, 14 to 16 per cent	42.42

Ferroalloys.—Pending inquiries for spiegeleisen aggregate 500 tons. Ferromanganese has been quiet in this district, but sales in St. Louis have been negotiated at \$100, seaboard.

We quote 80 per cent ferromanganese, \$107.56, delivered; 50 per cent ferrosilicon, \$75, delivered; spiegeleisen, 18 to 22 per cent, \$39.56, delivered.

Plates.—Demand showed further expansion following the election and local capacity is now being booked until well toward the close of the year. Buyers are anxious to place first quarter business, but producers are disinclined to take much business for that delivery at present prices. In fact, it is intimated that plates will soon be advanced to 2.20c., Chicago. Although no large oil storage tank awards are reported, a local mill has booked a total of 12,000 tons of plates from tank builders.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—A considerable number of structural awards were released following the election, the largest being the Eitel Brothers hotel, theater and office building, Chicago, 6500 tons, which went to the Morava Construction Co. and a foundry at Mt. Vernon, Ill., 1850 tons for the Mt. Vernon Car Mfg. Co., which was placed with the McClintic-Marshall Co. Fabricators are buying not only for work on hand but also for stock. A leading local mill booked 40,000 tons of plain material during the week. Chicago capacity in plain material is now engaged for most of the remainder of the quarter and there is talk of an early advance in prices to 2.20c., Chicago.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Demand for soft steel bars has been heavy, coming from practically all sources. Jobbers, reinforcing bar dealers and manufacturing users have bought or are now trying to buy for stock. Local capacity is upon their books for first quarter at present prices. It is said that prices will be advanced to a minimum of 2.10c., Chicago, and in support of this report is the increasing amount of tonnage which is commanding

from 2.05c. to 2.10c. Business in bar iron also shows some improvement, although not comparable with that in soft steel. Rail steel mills are encouraged by the steady increase in their commitments; in fact, one leading producer is booked on a double turn basis for the remainder of the year. Rail steel bars will undoubtedly follow soft steel bars if the latter advance.

Mill prices are: Mild steel bars, 2c. to 2.10c.; common bar iron, 2.10c. to 2.15c., Chicago; rail steel, 2c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.50c.

Sheets.—New business in sheets has increased considerably, but demand is not yet so widespread as for plates, shapes and bars. Local capacity is well booked, however, and prices are firm. As to the possibility of an advance in prices, another week will probably tell the tale.

Chicago delivered prices from mill are 3.65c. for No. 28 black, 2.85c. for No. 10 blue annealed, 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—The latest post-Pittsburgh plus development is the placing of Duluth prices on a parity with those of Chicago district mills, namely at \$2 a ton above the prices at Cleveland and Pittsburgh. Originally the Duluth base prices were established at \$4 a ton higher than those at Cleveland and Pittsburgh. This new reduction will no doubt have the effect of shutting out rail and Lake competition from mills in Ohio and at Pittsburgh. Some of these independents, it is said, were preparing to establish stocks at Duluth; one mill, in fact, is reported to have already shipped a large stock to that city. New business has shown healthy improvement following the election and jobbers are more inclined to lay in stocks. This is particularly true of distributors in the Middle West, Southwest and South and less so of those in the Northwest. As mill stocks are depleted, production is showing gains. For mill prices see finished iron and steel, page 1314.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed, \$3.05 per 100 lb.; common wire nails, \$3.15 per 100 lb.; cement coated nails, \$2.40 per keg.

Bolts, Nuts and Rivets.—The election has apparently had no material effect on demand for these commodities. Specifications are somewhat better, but they cannot be described as heavy. Buyers evidently loaded up rather heavily prior to the advance of Oct. 1. For mill prices, see page 1316.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 2.85c.; machine bolts up to $\frac{3}{4}$ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to $\frac{3}{4}$ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, square, tapped or blank, \$3.50 off; hot pressed nuts, hexagon, tapped or blank, \$4.00 off; coach or lag screws, 60 per cent off.

Cast Iron Pipe.—Detroit has not yet awarded 2000 tons of 6-in. on which it took bids Oct. 31, but the tenders made indicate that prices have advanced \$2 to \$3 a ton. Claussen, Mich., has placed 850 tons with the National Cast Iron Pipe Co. The United States Cast Iron Pipe & Foundry Co. has been awarded 350 tons for Evansville, Ind., and 110 tons for Hammond, Ind.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$54.20 to \$55.20; 6-in. and over, \$50.20 to \$51.20; Class A and gas pipe, \$5 extra.

Rails and Track Supplies.—Rail buying, which has been a feature of the market for several weeks, promises to remain in that role for some time. The Chesapeake & Ohio has placed 12,000 tons with Illinois Steel Co., 12,000 with Inland Steel Co. and 6000 tons with Bethlehem Steel Co., while for its subsidiary, the Hocking Valley, it has ordered 5000 tons from Carnegie Steel Co. The Northern Pacific has placed 15,750 tons with Illinois Steel Co. The International & Great Northern has ordered 7500 tons from the Tennessee Coal, Iron & Railroad Co. Prospective purchasers of rails include the Santa Fé, the Chicago & North Western, the Chicago & Alton, the Burlington and the Monon. A leading local mill has booked 7000 tons of angle bars and 9000 kegs of spikes and bolts during the week.

A considerably larger quantity of track supplies is pending.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. makers' mill.

Standard railroad spikes, 2.80c. mill; track bolts with square nuts, 3.30c. mill; steel tie plates, 2.30c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.45c. base, and track bolts, 4.45c. base.

Warehouse Prices.—Local jobbers have advanced discounts on machine and carriage bolts and lag screws five points and have raised square hot-pressed nuts 50c. per 100 lb. Hexagon hot-pressed nuts remain unchanged. For new prices see paragraph on bolts, nuts and rivets.

Reinforcing Bars.—The general quotation on concrete bars now appears to be 2.50c., Chicago warehouse, although sales at that price thus far have been confined to relatively small tonnages.

Lettings include:

Eitel Brothers Building, Chicago, 850 tons, to Olney J. Dean & Co.

Morrison Hotel addition, Chicago, 1000 tons, to American System of Reinforcing.

Sewage disposal plant, Elgin, Ill., 400 tons to Concrete Steel Co.

Pending work includes:

Illinois State Highway Department, highway work, 2500 tons, general contract bids to be taken Nov. 12.

South Water Street Improvement, Chicago, section No. 1, 150 tons, general contract awarded to White Paving Co., Chicago.

Austin Y. M. C. A. Building, Chicago, 200 tons, general contract awarded to William Mavor, Chicago.

Englewood Y. M. C. A. Building, Chicago, 200 tons, general contract awarded to William Mavor, Chicago.

Jewelers Building, Chicago, 500 tons, Starratt Brothers, general contractors, steel to be bought about the first of the year.

Women's Athletic Club, Chicago, 200 tons, bids in.

Union League Club, Chicago, 200 tons, bids in.

Standard Club, Chicago, 250 tons, to Olney J. Dean & Co.

Old Material.—Both consumer buying and trading among dealers have become more active since the election and prices have advanced. The leading independent steel works has closed for 15,000 tons of heavy melting at \$17.50 per gross ton, delivered. A number of other consumers of basic open hearth grades are now in the market. Prominent users of low phosphorus steel grades have made liberal purchases and a number of good sized orders for iron mill grades and cast scrap have been placed. The market is buoyant and further advances are looked for. Railroad offerings include the Santa Fé, 3400 tons; the Northern Pacific, 1700 tons; the Monon, 600 tons, and the Soo Line, 450 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton
Iron rails	\$13.50 to \$19.00
Cast iron car wheels	13.50 to 19.00
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	20.00 to 20.50
Railroad tires, charging box size	20.50 to 21.00
Railroad leaf springs, cut apart	20.00 to 20.50
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	19.00 to 19.50
Heavy melting steel	17.25 to 17.75
Frogs, switches and guards cut apart	17.50 to 18.00
Shoveling steel	17.00 to 17.50
Drop forge flashings	12.50 to 13.00
Hydraulic compressed sheets	14.00 to 14.50
Axle turnings	14.50 to 15.00
Steel angle bars	18.50 to 19.00
Steel knuckles and couplers	19.00 to 19.50
Coil springs	21.00 to 21.50
Low phos. punchings	18.50 to 19.00
Machine shop turnings	10.50 to 11.00
Cast borings	12.50 to 13.00
Short shoveling turnings	12.50 to 13.00
Railroad malleable	19.00 to 19.50
Agricultural malleable	18.00 to 18.50

	Per Net Ton
Iron angle and splice bars	17.50 to 18.00
Iron arch bars and transoms	19.50 to 20.00
Iron car axles	25.50 to 26.00
Steel car axles	18.00 to 18.50
No. 1 busheling	18.50 to 19.00
No. 2 busheling	9.00 to 9.50
Pipes and flues	12.00 to 12.50
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	15.25 to 15.75
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	17.00 to 17.50
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	17.00 to 17.50
Stove plate	15.00 to 15.50
Grate bars	18.00 to 18.50
Brake shoes	15.00 to 15.50

New York

Heavy Buying of Pig Iron—Improved Conditions in Finished Material

NEW YORK, Nov. 11.—Distinct improvement characterizes the market in both finished lines and pig iron, but in actual tonnage placed the latter makes the better showing. Although the great activity in the stock market following the election has had some influence, a conservative feeling prevails. Pig iron sales during the past week are estimated at about 50,000 tons and inquiries amounting to 15,000 tons, not including the American Radiator and American Brake Shoe & Foundry companies' tonnages, are pending, the largest inquiry being one for 5000 tons from Richardson & Boynton, one-half for the remainder of this year and the other half for the first quarter of next year. The American Radiator Co. has covered for all of its plants except Bayonne, for which it is still figuring on 12,000 tons. The price situation shows little change except that there is a firmer attitude on the part of sellers. It is believed that the large tonnages recently placed went at prices which have prevailed of late. At Buffalo one large producer who has been quoting \$20 for fourth quarter and \$19 for first quarter now adheres to \$20 for both periods and has sold a tonnage of No. 1 iron at \$21.50. In eastern Pennsylvania \$20.50 seems to be the minimum.

We quote delivered in the New York district as follows, having added to furnace price \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25...	\$22.77
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.27
Buffalo, sil. 1.75 to 2.25	\$24.41 to 24.91
No. 2 Virginia, sil. 1.75 to 2.25	29.94 to 30.44

Finished Material.—Improvement is noted all along the line and the tendency is to get away from the lowest prices recently named. On plates one central Pennsylvania company has advanced to a price equivalent to 1.70c., Pittsburgh, but 1.65c. can still be done. On bars 2c., Pittsburgh, is asked by the Steel Corporation and some of the independents, but 1.90c. is being done. A very fair tonnage of structural material has been closed within a few days and the outlook is encouraging. Inquiries for sheets from car equipment companies, car manufacturers and others are more numerous, but prices are not firm. A sale of 200 tons of alloy steel has been made to a locomotive company and it is expected that a company connected with the automotive industry will buy 1500 tons of alloy forgings shortly.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c.; plates, 1.94c. to 1.99c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.34c.

Ferroalloys.—Inquiries for ferromanganese total about 1000 tons. There have been sales of carload and small lots at the full price of \$100, seaboard basis. There have been fairly good sales of spiegeleisen aggregating several hundred tons, but inquiries are limited to small lots thus far. There is very little new business in 50 per cent ferrosilicon or standard ferrochromium, but specifications on contract are increasing. There has been no change in quotations.

Cast Iron Pipe.—Activity in this district has simmered down to purchasing of small lots by private interests. Prices are generally unchanged with makers fairly well filled to the end of the year. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$55.60 to \$56.60; 4-in. and 5-in., \$60.60 to \$61.60; 3-in., \$70.60 to \$71.60, with \$5 additional for Class A and gas pipe. The soil pipe market is still lacking in stability. In some cases, makers have advanced quotations by a 5 point reduction, which they claim has stimulated some business; other makers are maintaining the same schedule. Jobbers are showing more inclination to increase their stocks in anticipation

of a rising market. We quote discounts of both Northern and Southern makers, f.o.b. New York, as follows: 6-in., 47½ to 57½ per cent off list; heavy, 57½ to 67½ per cent off list.

Warehouse Business.—Demand has improved somewhat in the more mobile products, inquiries are fairly numerous, though not large, and prices are generally firm at unchanged levels. Recent events have inspired the buyer with confidence, still he is not venturing into large tonnage. Plates and sheets, particularly galvanized, have moved freely; even black sheets felt the impetus of renewed buying, though in this case it was limited. Some decline is noticed in structural steel. Bars are in good demand. Recent increases in some of the non-ferrous lines have caused a lull in buying, but buyers' stocks are still lean, it is believed. Pig lead and the solder group have been marked up and Straits pig tin is up 1c. to 56c. It appears that the mill position has improved, though only moderately. Demand in high carbon steels is light. One or two large interests have built up stocks, but there is reason to believe that most small warehouses have allowed stocks to dwindle. Prices are given on page 1326.

Old Material.—The market is as quiet as it has been for many weeks. Consumers are still receiving shipments on old contracts and show no inclination to pay higher than current prices. Dealers, on the other hand, in anticipation of higher prices, are in most cases holding out for advances with the result that brokers encounter some difficulty in fulfilling contracts with mills. Heavy melting steel is quiet and unchanged at \$16 to \$17 per ton, brokers' buying price delivered to eastern Pennsylvania consumers. Forge fire is slightly more active than recently and exhibits some strength. Brokers are offering as high as \$14.50 per ton delivered Conshohocken, Phoenixville or Harrisburg. As high as \$14.50 per ton is reported being paid on machine shop turnings delivered eastern Pennsylvania. Specification pipe is unchanged at \$16 per ton eastern Pennsylvania and a consumer at Lebanon is reported to have temporarily suspended shipments.

Buying prices per gross ton New York follow:

Heavy melting steel, yard.....	\$12.00 to \$12.50
Heavy melting steel, railroad or equivalent	12.75 to 13.25
Rails for rolling.....	14.50 to 15.00
Relaying rails, nominal.....	24.00 to 25.00
Steel car axles.....	18.00 to 18.50
Iron car axles.....	26.00 to 28.00
No. 1 railroad wrought.....	14.50 to 15.00
Forge fire	10.50 to 11.00
No. 1 yard wrought, long.....	13.50 to 14.00
Cast borings (clean).....	9.75
Cast borings (chemical).....	13.25 to 13.75
Machine shop turnings	9.75 to 10.25
Mixed borings and turnings....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	12.25
Stove plate	11.00 to 11.75
Locomotive grate bars.....	11.50 to 12.50
Malleable cast (railroad).....	14.00 to 14.50
Cast iron car wheels.....	14.50 to 15.00
No. 1 heavy breakable cast.....	11.75 to 12.25

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.00 to \$16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	13.00 to 13.50

Rate on Plates Not Unjust

WASHINGTON, Nov. 11.—Passing upon a complaint of the Standard Boiler & Plate Iron Co., the Interstate Commerce Commission last week handed down a decision holding that rates of \$1.255 per 100 lb. and \$1.335 per 100 lb., charged on steel plates, sheet iron and tank material, knocked down in carloads from Niles, Ohio, to Mexia, Tex., in October and November, 1921, were not unjust and unreasonable. The company had complained that the rates were unreasonable to the extent that they exceeded 93c. per 100 lb. The commission announced that it had made its finding without prejudice to any future adjustment made as a result of findings in connection with a complaint of the Dallas Chamber of Commerce. The present rate on tank material, knocked down, is \$1.02. The same rate applies from Pittsburgh to Mexia.

Buffalo

Heavy Buying of Pig Iron Follows That of the American Radiator Co.

BUFFALO, Nov. 11.—The American Radiator Co., which last week inquired for a considerable tonnage of iron, has bought sufficient to cover all its plants except Bayonne, N. J., for the first quarter of 1925. Other inquiry was brisk and producers feel encouraged to believe that a decided improvement is about to come. A total of 25,000 tons of inquiry was reported, with the probability that other iron was placed without the formality of inquiry. Several 2000-ton lots were asked for and placed, including 2000 tons for the Massey-Harris Co., which came to Buffalo. Business was general among all classes of foundries. On inquiry of the past week and the present week, one producer booked a total of 30,000 tons, while another booked 15,000 to 20,000 tons. While considerable of this iron noted in the above inquiries was placed at a \$19 base, furnaces have wiped out the \$19 price and are now quoting \$20 base, with the possibility that this might be shaved under pressure. On the \$20 base the range is \$20.50 and \$21.50 for the higher silicons. It is believed that 50,000 or 60,000 tons would be a conservative estimate of the iron booked here during the past week, exclusive of the American Radiator purchasing. One furnace is now scarcely able to sell another ton for early shipment and was forced to decline to quote on 4000 tons of foundry wanted promptly.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25....	\$19.50 to \$20.00
No. 1 foundry, sil. 2.75 to 3.25....	21.00 to 21.50
No. 2 foundry, sil. 2.25 to 2.75....	20.00 to 20.50
Malleable, sil. up to 2.25.....	19.50 to 20.00
Basic	19.50 to 20.00
Lake Superior charcoal.....	29.28

Finished Iron and Steel.—An optimistic view is taken of future business by local mills and while no startling improvement has taken place so far, it is generally believed that this will be a development of the next few weeks. Bar business shows a slight improvement, but plate and shape business runs about the same. Sheets are improved, with the prevailing price about 3.50c. for black and 4.50c. to 4.60c. for galvanized. Fabricators report that many small lots are being closed and a few sizable contracts were made during the week. The tendency in structural steel price negotiations is to firm a little, but prices are not yet strong. Reinforcing bar business is slightly improved, the week's inquiries including one for 200 tons for a new Shea's theater and one for 200 tons for School No. 43, Buffalo. Bids are still being taken on both these jobs.

Steel bars, 3.30c.; iron bars, 3.35c.; reinforcing bars, 3.30c.; structural shapes, 3.40c.; plates, 3.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.85c.; bands, 4.05c.; hoops, 4.40c.; cold-finished rounds, 4.20c.; cold-finished shapes, 4.70c.

Old Material.—On inquiries out prior to election local consumers have purchased about 15,000 tons of heavy melting steel in the past week or so at a price said to be \$17.50 to \$18. Outside of this development the market is not active. For a couple of days after election it stiffened, but it is now back again where it was. One of the railroads is said to have obtained approximately \$19 Youngstown for heavy melting steel list and prices are a little higher than last month, but not much. No rush is on by the mills to buy and improvement, most dealers believe, will be slow. A little demand exists for low phosphorus at \$19.50 to \$20. The specialties are slow, with little demand.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel.....	\$17.00 to \$18.00
Low phosphorus, 0.04 and under	19.50 to 20.00
No. 1 railroad wrought.....	15.00 to 16.00
Car wheels	16.00 to 17.00
Machine shop turnings.....	12.00 to 12.50
Cast iron borings.....	12.00 to 12.00
No. 1 busheling.....	15.50 to 16.00
Stove plate	15.00 to 15.50
Grate bars	14.50 to 15.00
Banded sheets	12.00 to 12.50
Hydraulic compressed	16.00 to 16.50
Railroad malleable	17.50 to 18.00
No. 1 machinery cast.....	17.00 to 17.50

St. Louis

Pig Iron Market Stronger After More Liberal Buying Following Election

ST. LOUIS, Nov. 11.—Sales of pig iron during the last week are estimated to have been around 18,000 tons, most of the orders being placed after the election on Tuesday. The Sloss-Sheffield interests enjoyed the major part of the business, taking orders for around 12,000 tons, mostly for first quarter delivery and practically all for shipment from Florence or Sheffield by water and rail, under an arrangement that netted a saving for the buyers and a better price for the maker as compared with all-rail shipment from Birmingham. The Southern maker's largest sale was 2300 tons to a St. Louis job foundry, and there were several 1500-ton orders for stove plants in the district. Some melters who placed orders before the election doubled their specifications after the balloting. Sales of the St. Louis Coke & Iron Co. during the week totaled 7000 tons of foundry iron for shipment the rest of 1924 and over the first quarter of next, its largest sale being 1500 tons to a St. Louis melter, the remainder in lots of 100 to 300 tons. The Granite City furnace, which has been making basic iron for some time, is now operating on foundry grades, of which it is practically sold up for this year. The Scullin Steel Co. has added another furnace, as has the National Enameling & Stamping Co. Business of the foundries generally is improving. None of the business for the American Radiator plants in this section was placed in the St. Louis market. The market is stronger as a result of the increased buying, but prices are unchanged. The only new inquiries of importance are 500 tons of foundry iron for an Indiana melter for first quarter delivery and 500 tons of foundry for a Kansas City concern for shipment through December and first quarter.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Florence and Sheffield (rail and water), \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25....	\$22.66 to \$23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Southern fdy., sil. 1.75 to 2.25	22.67 to 23.67
(rail)	22.67 to 23.67
Southern fdy., sil. 1.75 to 2.25	20.78 to 21.78
(rail and water).....	20.78 to 21.78
Granite City iron, sil. 1.75 to 2.25	22.31 to 22.81

Finished Iron and Steel.—Railroad business is more active. The Missouri-Kansas & Texas bought 250,000 8½-lb. tie plates from the Illinois Steel Co. The Kansas City Southern bought 3000 tons of 100-lb. rails from the Bethlehem Steel Co. The Missouri Pacific, which, as announced in last week's IRON AGE, bought 30,000 tons of rails, is in the market for 75,000 pairs of splice bars, 1500 kegs of track bolts and 3400 kegs of spikes. The Texas & Pacific Railway is in the market for its 1925 requirements of tie plates. With the prospect of an advance of 10c. in structural shapes, fabricators placed some business, but they are still conservative in their buying. Sheets are still dragging, but there has been an improvement in buying of other items, although orders are still moderate. Bids for approximately \$6,500,000 of new Missouri roads, most of which will be concrete, will be opened at Jefferson City on Nov. 25 and 26, a matter of considerable interest to reinforcing bar interests.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled one pass, 5c.; cold-rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, 3-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, \$2.50 off list.

Coke.—An improvement in the demand for foundry coke is reported, and it is expected that business will steadily increase from now on. Consumers of coke for water gas purposes are buying very conservatively. The business in domestic coke has been hard hit by the

warm weather, but a drop in temperature the latter part of the week is expected to stimulate buying by consumers.

Old Material.—The market for old material is stronger and dealers are paying from 50c. to \$1 a ton more for items than a week ago. Consumers in the district have begun to buy in larger quantities and are willing to pay higher prices than a week ago. Consumers report an improvement in their business, and it is expected that the buying will continue. Stocks in hands of dealers are reported to be low, and they are readily absorbing all offerings by railroads and others. New railroad lists include: Norfolk & Western, 7700 tons; Atchison, Topeka & Santa Fe, 3200 tons; Illinois Central, 4000 tons; Missouri-Kansas-Texas, 1800 tons; Great Northern, 2000 tons; Missouri Pacific, 4000 tons; Pullman Co., 700 tons and Mobile & Ohio, 2000 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$17.00 to \$17.50
Rails for rolling	17.50 to 18.00
Steel rails, less than 3 ft.	19.00 to 19.50
Relaying rails, 60 lb. and under.	25.00 to 26.00
Relaying rails, 70 lb. and over.	32.50 to 33.50
Cast iron car wheels	16.50 to 17.00
Heavy melting steel	15.00 to 15.50
Heavy shoveling steel	15.00 to 15.50
Frogs, switches and guards cut apart	17.00 to 17.50
Railroad springs	19.00 to 19.50
Heavy axles and tire turnings.	12.50 to 13.00
No. 1 locomotive tires	16.50 to 17.00

Per Net Ton	
Steel angle bars	15.00 to 15.50
Steel car axles	19.00 to 19.50
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	18.25 to 18.75
No. 1 railroad wrought.	13.00 to 13.50
No. 2 railroad wrought.	13.00 to 13.50
Cast iron borings	10.75 to 11.25
No. 1 busheling	12.50 to 13.00
No. 1 railroad cast.	17.00 to 17.50
No. 1 machinery cast	18.00 to 18.50
Railroad malleable	14.00 to 14.50
Machine shop turnings	7.50 to 8.00
Champion bundled sheets	8.00 to 8.50

Birmingham

Pig Iron Sales Reach Large Tonnage—Higher Prices Asked

BIRMINGHAM, ALA., Nov. 11.—Active selling of pig iron has started with asking prices ranging from \$18 to \$18.50. It is estimated that 60,000 tons of iron has been sold in the last few days and many inquiries are for deliveries in the first quarter of next year. Sanitary pipe makers will require considerable iron. Pig iron production in Alabama is showing decided increase, the output at blast furnaces in October being the largest of any month this year, 250,472 tons, while for the ten months this State is given credit for 2,298,234 tons. Several blast furnaces broke records in October. A good start has been made on the make for November and iron is also being taken from the surplus stock. Two blast furnaces are under repairs in this district, two are now ready for the torch and two others will be relined shortly.

Steel.—Consumers of steel are expecting an advance in quotations. Operations at mills and fabricating shops remain about the same as has been noted for the past several weeks. Steel bars, soft, are quoted at 2.05c. to 2.15c. Birmingham. The Tennessee Coal, Iron & Railroad Co. is getting a share of the allocation of railroad orders, for rail and underframes besides other shapes.

We quote per gross ton, f.o.b. Birmingham district furnace, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$17.50 to \$18.50
No. 1 foundry, 2.25 to 2.75 sil.	18.00 to 18.50
Basic	18.50 to 19.00
Charcoal, warm blast	30.00 to 31.00

Cast Iron Pipe.—A number of lettings are being reported every week for the cast iron pipe producers, gas and water pipe. Quotations for 6-in. and over are \$42 to \$43 and for the 4-in. and over, \$46 to \$47. As has been the rule for some time, no cast iron pipe of the larger sizes is being stocked, the pipe being tested

as quickly as it comes from the molds. The winter slack has not yet set in.

Old Material.—The dullness which has been noted in the scrap iron and steel market for the past few weeks continues with no indications of an early abatement. Dealers do not believe there will be an upward turn this year. Stock sufficient to meet normal demands will be carried, no speculation to be attempted.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical.	\$15.00 to \$16.00
Heavy melting steel	12.00 to 12.50
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	12.50 to 13.00
No. 1 cast.	14.00 to 15.00
Tram car wheels	15.00 to 16.00
Car wheels	14.00 to 15.00
Stove plate	13.50 to 14.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	7.00 to 8.00
Rails for rolling	15.00 to 16.00

Boston

Pig Iron Market Is Firmer and a Shade More Active

BOSTON, Nov. 11.—There is no discounting the fact that pig iron prices are firmer, but how stable ruling prices are remains to be seen. Usually in the past, furnaces in announcing an advance in prices, have notified brokers to withdraw all prices outstanding. This time, however, furnaces informed brokers and representatives that prices were to be higher, but that business would be accepted on the old basis up to a certain date. Since prices have been advanced, furnaces have, in some instances, disregarded silicon differentials rather than pass up business. It therefore cannot be said prices are firmly established on the new basis. A New Hampshire buyer the past week was offered Buffalo iron, silicon 3.00 to 3.25, at \$21 furnace. That price on the furnace's regular differentials figures back to \$19.50 base, whereas the company claims to be on a \$20 base. Buyers maintain eastern Pennsylvania iron can be purchased at \$20.50 furnace base, whereas no furnace is quoting openly at less than \$21 base. In all fairness it should be stated, however, that a considerable business has been booked since the national election at full advanced prices. Aggregate sales in this market the past week are 5000 to 6000 tons, and include a considerable quantity of India iron purchased by stove and heater manufacturers for first quarter delivery. More inquiry, in 500-ton and smaller lots for first quarter delivery, is noted than in several weeks.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East Penn., sil. 1.75 to 2.25	\$24.65 to \$25.15
East Penn., sil. 2.25 to 2.75	25.15 to 25.65
Buffalo, sil. 1.75 to 2.25	24.41 to 24.91
Buffalo, sil. 2.25 to 2.75	24.91 to 25.41
Virginia, sil. 1.75 to 2.25	29.42 to 29.92
Virginia, sil. 2.25 to 2.75	29.92 to 30.42
Alabama, sil. 1.75 to 2.25	27.10 to 27.60
Alabama, sil. 2.25 to 2.75	27.60 to 28.10

Finished Material.—Local mill representatives predict higher prices for most mill products, and one independent plate mill actually has advanced prices \$3 a ton. Steel fabricators are covering themselves on contemplated business, but buyers in general continue to purchase on a hand-to-mouth basis regardless of the talk of higher prices. Mills are reported as having booked large tonnages in the West, but do not expect much increase in New England buying until after year-end inventories are taken. Plates are quoted in this market at \$1.96 to \$2.11½ per 100 lb. delivered, freight allowed; shapes at \$2.26½ to \$2.35½; and bars at \$2.26½.

Coke.—Due to the opening of first half 1925 contract books by New England producers, the by-product foundry coke market was unusually active the past week. The Providence Gas Co., the smaller of the two producers, closed its books in two days, having booked itself to capacity. The New England Coal & Coke Co. has booked far more forward business than a year ago at this time. Its books always remain open. Brokers

without exception report that consumers contracted more quickly than in any similar period in recent years. Both the New England Coal & Coke Co. and the Providence Gas Co. are accepting specifications against last half, 1924 contracts at \$11.50 a ton delivered. October shipments by these companies were at least 50 per cent more than September, and since the election foundries have specified even more freely. Indications are producers will ship more foundry coke the first half of November than in the first half of October.

Old Material.—Sentiment is influencing prices on some old material more than actual business. In some instances prices are all of 50c. a ton higher, while general business is about 50 per cent smaller. A New Haven, Conn., buyer, offering \$12.65 on cars for 500 tons heavy melting steel has not been able to cover. On the other hand, local brokers offering \$13 for railroad steel for Pittsburgh shipment report little difficulty in securing material. All that some houses will give for heavy melting steel is \$12. Machine shop turnings are \$9 to \$9.50 on cars shipping point, contrasted with \$8.50 to \$9 a week ago, and chemical borings, which are scarce, \$12 to \$12.50, as against 11.50 to \$12 a week ago. Mixed borings and turnings are unchanged in price at \$8.50 to \$9, but really weaker than the price indicates. Skeleton for steel mill use is firm at \$9 to \$9.50, while there is no market for forged scrap and prices are easily 50c. a ton under those for skeleton. Forge flashings are 50c. higher at \$10 to \$10.50, and shafting values have appreciated notwithstanding the withdrawal of a Portland, Me., buyer from the market. Quotations on railroad malleable and stove plate are nominal, there being no market for such material. No. 1 machinery cast is moving occasionally with \$19 delivered about the best that can be obtained by brokers.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$18.00 to \$19.00
No. 2 machinery cast.....	15.00 to 16.00
Stove plates.....	14.00 to 14.50
Railroad malleable.....	17.50 to 18.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$12.00 to \$13.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 1 yard wrought.....	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long).....	11.00 to 11.50
Machine shop turnings.....	9.00 to 9.50
Cast iron borings, chemical.....	12.00 to 12.50
Cast iron borings, rolling mill.....	8.50 to 9.00
Blast furnace borings and turnings.....	8.50 to 9.00
Forged scrap.....	8.00 to 8.50
Bundled skeleton.....	9.00 to 9.50
Bundled cotton ties.....	8.50 to 9.00
Forged flashings.....	10.00 to 10.50
Shafting.....	17.50 to 18.00
Street car axles.....	17.50 to 18.00
Rails for rerolling.....	13.00 to 13.50
Scrap rails.....	12.50 to 13.00

Cincinnati

Very Active Buying of Pig Iron with Large Inquiry Pending

CINCINNATI, Nov. 11.—A wave of buying set in after election day and fully 30,000 tons of iron was booked last week by sellers in this district. The movement is continuing, with over 20,000 tons on inquiry. Most of the buying was for first quarter delivery and included several lots of 2000 tons each, one of 3000, and others ranging from 700 to 1500. Northern and Southern brands were active, the tonnages being about evenly divided. It was noticeable that considerable Southern iron was sold for movement north of the Ohio River into Indiana, Ohio and western Pennsylvania. Prices are firm, Southern iron being quoted at \$17.50 for prompt shipment, with practically all furnaces now holding to \$18 for first quarter. There has been, however, some Southern iron booked at \$17.50 for first quarter. In the iron district, the only active producer advanced its price for last quarter to \$25, with the same price for first quarter. There is some resale iron available at \$20 for last quarter, but the tonnage is small. The largest inquiry being figured on is 10,000 tons of Southern and 3000 tons of Northern for a Kentucky sanitary ware manufacturer. Other in-

quiries range from 200 tons to 1500 tons, mostly for first quarter. Foundry and malleable grades are most in demand, though there have been some transactions in silveries and charcoal. Bessemer and basic grades are active. One Ashland furnace of the American Rolling Mill Co. and Globe silvery furnace at Jackson will blow in about Nov. 15. La Follette furnace in Tennessee has gone out for repairs.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25	
(base).....	\$21.55 to \$22.05
Southern fdy., sil. 2.25 to 2.75.....	22.05 to 22.55
Southern Ohio silvery, 8 per cent.....	31.27 to 31.77
Southern Ohio fdy., sil. 1.75 to 2.25.....	22.27 to 22.77
Southern Ohio, basic.....	21.77
Southern Ohio malleable.....	22.27

Sheets.—The American Rolling Mill Co. has opened its books for first quarter at 2.70c., 3.65c. and 4.70c. for blue annealed, black and galvanized sheets respectively. The prices are subject to immediate acceptance. Automobile body sheets are unchanged at 4.65c. The range generally is 2.60c. to 2.70c., Pittsburgh, for blue annealed, 3.50c. to 3.65c. for black and 4.50c. to 4.70c. for galvanized sheets, with automobile body sheets quoted at 4.65c. It is reported that an independent mill has advanced tin plate prices \$2 per ton, though no confirmation is available locally.

Reinforcing Bars.—Two garage buildings, in Cincinnati, will require about 300 tons each, while a store for the F. W. Woolworth Co. will require 100 tons. Inquiries for these three projects have been issued. There have been no awards of importance. Prices of reinforcing bars are showing evidences of strength, but no changes have been made, the usual range of quotations being from 1.85c. mill, for hard steel, to 2c. for billet steel.

Structural Activity.—Bids for two Louisville & Nashville Railroad bridges involving 1200 tons of steel are in, but new business is conspicuously absent, the only inquiry being for 100 tons for a store at Cincinnati for the F. W. Woolworth Co. Quotations are strengthening, coincident with a stronger tone in plain material.

Warehouse Business.—Jobbers continue to report business increasing, and November is expected to prove another good month. Orders are gradually increasing in size, and more buyers are in the market. Prices are firmly maintained.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 2.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, \$3.15 per 100 lb.; common wire nails, \$3.15 per keg base; cement coated nails, \$2.85 per

Finished Materials.—Though there is nothing resembling a boom, there is a considerably improved movement of steel products since the election. Inquiry is good for first quarter delivery, but none of this business is being booked, mills apparently being in no hurry to announce first quarter prices. For the remainder of the year, however, some fair orders have been placed, and consumers are adding to specifications on contracts for delivery before the end of December. Stock orders from jobbers stand out. Buyers apparently are of the opinion that higher prices are in sight, and where justified, are covering for their needs without haggling over prices. The market generally is stronger, and the low prices current last week for small tonnages of plates, shapes and bars are no longer to be had. Quotations of 1.85c., Pittsburgh, for plates, and 2c. for bars and shapes are being adhered to for shipment into this district, while Chicago district mills are quoting \$2 per ton above these prices, f.o.b. Chicago. There has been little activity in track accessories, and while prices of railroad spikes are fairly steady at \$2.70, Pittsburgh, prices of small spikes are erratic. Wire products are in light demand, though there are no present indications that base prices at Ironton, Pittsburgh and Cleveland are being shaded. A fair demand for cold-finished materials is reported at 2.70c., Pittsburgh.

Fluorspar.—There has been some activity in fluorspar among the steel companies, but orders usually are for less than 500 tons at prices unchanged from last week. Prices are quoted on page 1316.

Coke.—A furnace interest in Southern by-product is reported to have placed an order for 25,000 tons of coke for delivery through the first quarter. The price was not disclosed. Generally the coke market is inactive, though prices are steady and unchanged.

Old Materials.—While the market can hardly be classed as active, there has been some buying by consumers, notably melting steel and busheling. Prices generally are 50c. to \$1 per ton higher than last week. High prices are expected to be paid for materials on lists of the Southern, Norfolk & Western, Chesapeake & Ohio and Louisville & Nashville railroads, all of which close this week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$14.50 to \$15.00
Scrap rails for melting	13.50 to 14.00
Short rails	17.00 to 17.50
Relaying rails	29.00 to 29.50
Rails for rolling	15.00 to 15.50
Old car wheels	13.50 to 14.00
No. 1 locomotive tires	16.00 to 16.50
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.00 to 14.50
Loose sheet clippings	11.00 to 11.50
Champion bundled sheets	12.00 to 12.50
Per Net Ton	
Cast iron borings	10.00 to 11.00
Machine shop turnings	9.50 to 10.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	15.50 to 16.00
Iron axles	21.00 to 21.50
No. 1 railroad wrought	11.50 to 12.00
Pipes and flues	8.00 to 8.50
No. 1 busheling	10.50 to 11.00
Mixed busheling	8.50 to 9.00
Burnt cast	10.50 to 11.00
Stove plate	10.50 to 11.00
Brake shoes	12.00 to 12.50

Cleveland

Pig Iron Sales Large—Moderate Increase in Finished Material Prices

CLEVELAND, Nov. 11.—While the Presidential election has not been followed by any marked rush of consumers to buy steel, there has been a slight increase in the volume of business and confidence in the future prevails. A good amount of tonnage continues to come out, but with some of the leading mills the volume did not increase over the preelection week. Any fears consumers may have had of marked advances in prices seem to have disappeared and they are not buying beyond their early requirements. While some first quarter business has been booked in steel bars, the general policy of the trade is to restrict purchases to this year's needs.

In the structural field there was considerable increase in inquiry during the week, some of which had probably been held back until the result of the election was known.

A heavy buying movement of pig iron is under way, but this got a fair start before election day and it seems to indicate that consumers who usually buy for their quarterly requirements feel that prices are as low as they will be and may go higher. The buying of steel has not resulted in any stiffening of the market and prices show virtually no change. Efforts to hold steel bars and structural material at the 2c. base are not wholly successful and plates have developed no strength. An inquiry has come out for another Lake boat requiring 5000 tons of steel, making two inquiries that are now actively before Lake shipyards. The Cleveland Telephone Co. has taken bids for its new exchange building, requiring 8000 tons of structural material, and it is expected that this will be placed this week. The Nickel Plate Railroad has authorized the purchase of 20,000 tons of rails for 1925. The Louisville & Nashville Railroad has an inquiry out for 700 tons of plates for repair work.

Pig Iron.—The buying movement that started about two weeks ago became very active the day after election and is still under way, with a large tonnage in inquiries still pending. Sales by Cleveland producers and by furnace companies with offices in this city during the week aggregated 150,000 to 175,000 tons, mostly

in foundry iron. The buying has been general in all the surrounding districts and in nearly all consuming industries. A heavy tonnage was purchased in the northern Ohio territory and the Michigan market has been particularly active, considerable iron being bought by the automotive and stove industries. Malleable iron does not show the activity of foundry grades. Some activity also developed in basic iron. A Valley district consumer purchased a lot of over 10,000 tons for the first quarter from a Valley producer at \$19 and another Valley consumer purchased 3000 tons, partly for this year's delivery, at \$18.50, and the remainder for the first quarter at \$19. Basic iron evidently can no longer be had under \$19. A large part of the buying is being done by consumers who come regularly in the market for iron to cover their requirements, and the buying movement appears to indicate a belief that prices will go no lower and may advance, as well as showing considerable confidence in the business outlook for the first quarter. Sales of foundry iron during the week included many lots of 1000 to 2000 tons and some as high as 5000 tons. While general price advances have not been made, the market shows a firmer tendency. Some foundry iron sales were made during the week for shipment from Cleveland at \$19.50, but \$20 is now being held as the minimum price and that is the general Lake furnace price for foundry and malleable grades. In the Valley district some foundry iron can still be had at \$19.50, but most producers are holding to \$20. Several inquiries are pending for 1000 to 2000-ton lots, and a leading sanitary interest has an inquiry out for 4000 tons of Southern foundry iron and 2000 tons of Northern iron for its Louisville plant. The American Steel Foundries is inquiring for 3000 tons of basic iron for its Alliance, Ohio, plant for the first quarter. A number of consumers have inquired for iron for the entire first half, but most producers have declined to sell beyond the first quarter. One seller has been able to take a few orders at a 50c. advance for the second quarter. Low phosphorus iron has become more active, and a Valley interest is holding to \$28 as a minimum price for the first quarter. Ohio silvery iron is firmer. One producer has advanced its price \$1 a ton to \$29.50 for 8 per cent, bringing it up to the regular schedule. Some business in Southern foundry iron for the first quarter is being taken at \$18, but this iron is still available at \$17.50 for early shipment, although most producers are asking the higher price. One Cleveland producer today advanced its price on foundry and malleable iron for Cleveland delivery 50c. to \$21, furnace, and another announced that it will go on the same basis. Late inquiries include one from southern Ohio for 20,000 tons of basic iron.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace	\$19.00
N't'n No. 2 fdy., sil. 1.75 to 2.25	\$21.00 to 21.50
Southern fdy., sil. 1.75 to 2.25	23.51 to 24.00
Malleable	21.00 to 21.50
Ohio silvery, 8 per cent.	32.52
Stand. low phos., Valley furnace	28.00 to 28.75

Iron Ore.—Several small lot sales of Lake Superior ore aggregating approximately 200,000 tons have been made during the past week or two and two Valley district merchant furnaces are reported to have placed three year contracts for their ore requirements. The late sales will keep some of the Lake boats in the ore trade longer than expected, although the Steel Corporation will wind up its shipments early this week, and the aggregate tonnage moved in November will be light. Stocks of Lake Superior ore on Lake Erie docks Nov. 1 were 8,118,921 tons, as compared with 7,704,919 tons on Oct. 1 and with 8,097,488 tons on Nov. 1 last year. Receipts at Lake Erie ports during October were 4,460,581 tons, and for the season until Nov. 1, 29,556,228 tons, as compared with 39,697,744 tons during the corresponding period last year. Lake Erie docks shipped 2,674,843 tons during October and 20,781,175 tons during the season to Nov. 1, as compared with 30,393,069 tons up to Nov. 1 last year. Receipts at other than Lake Erie ports this year up to Nov. 1 were 9,979,534 tons, as against 12,874,473 tons during the same period last year.

Steel Bars, Plates and Structural Material.—Most mills are holding to 2c., Pittsburgh, for steel bars, at which round lot business is being placed. However, the market has weak spots with quotations appearing equivalent to 1.90c., Pittsburgh. There is also some shading to 1.90c., Pittsburgh, on structural material to favored customers, although the common price is 2c. Plates range from 1.80c. to 1.90c., Pittsburgh, although some business is reported placed as low as 1.75c.

Semi-Finished Steel.—Regular quotations on forging billets are not being maintained in the local market, a price of \$41.50, delivered, or equivalent to less than \$39, Pittsburgh, being reported. Pittsburgh district mills have to absorb the freight rate on wire rods to get into Cleveland at the \$46 price, and consumers outside of Cleveland having a lower freight rate from Pittsburgh than the Pittsburgh-Cleveland rate claim to be able to secure wire rods at \$46, delivered. Sheet bars are quoted locally at \$37.50 and slabs and billets at \$37.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.35c.; No. 9 annealed wire, \$3.05 per 100 lb.; No. 9 galvanized wire, \$3.50 per 100 lb.; common wire nails, \$3.25 base per 100 lb.

Bolts, Nuts and Rivets.—The demand for bolts and nuts on contracts has further improved and orders are coming out for larger lots than recently, some now being for car loads. There is very little new buying, as most consumers have contracts at present prices, which are firm. Bolt and nut manufacturers in this territory are now operating their plants at from 60 to 70 per cent of capacity. Several of the Eastern bolt and nut manufacturers have just adopted new standards for stove bolts, dividing these into two classes, one with large and one with small heads. These bolts will have standard U. S. S. threads of 20 to the inch, as compared with the 18 to the inch standard used by the Central Western manufacturers, so that the bolts will not be interchangeable. The rivet market is quiet, with prices holding well to quotations on page 1315.

Sheets.—While there is talk of a stiffening in the sheet price, some of the mills that are anxious for tonnage are still shading prices. Black sheets are being offered at 3.30c., Pittsburgh, for immediate rolling, or \$2 a ton below the common minimum price. While most mills are holding to 2.60c. on blue annealed sheets, some business is being taken at 2.50c. Galvanized sheets are 4.50c.

Wire Products.—Some inquiries have come out for manufacturers' wire for the first quarter, but mills are not taking orders for longer than 90 days' requirements. Prices are fairly firm except on cement-coated nails, on which a price as low as 1.90c. is reported.

Reinforcing Bars.—The demand is light and limited to small lots. The market on rail steel bars continues weak, with quotations ranging from 1.80c. to 1.90c., but with car lots going at the lower price. The Cleveland Union Terminals Co. has asked for bids on 600 tons for early requirements.

Coke.—Some of the makers of the higher priced foundry cokes have opened their books for first quarter and first half contracts for Connellsville foundry coke at their present prices. Prices are unchanged at \$4.25 to \$5.50 for standard grades. Some of the makers of Wise County coke have advanced prices to 50c. a ton, the quotations for foundry coke now being \$5.50 to \$6. These prices are also being named for first quarter and first half contracts.

Old Material.—Dealers have advanced prices from 50c. to \$1 a ton in spite of a very limited amount of activity. The advance apparently has been brought about by the feeling among dealers that the iron and steel business will improve now that election is over. Sales of heavy melting steel are reported at \$19 to \$19.25 in the Valley district and \$16.75 delivered Cleveland. Small lot sales of borings and turnings and compressed steel were made at \$14.50 on cars in Cleve-

land. As consumers are showing little interest in the market, the price advances have not been tested.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	\$16.25 to \$16.50
Rails for rolling	16.50 to 16.75
Rails under 3 ft.	18.00 to 18.25
Low phosphorus melting	19.25 to 19.50
Cast iron borings	14.50 to 14.75
Machine shop turnings	13.75 to 14.00
Mixed borings and short turnings	14.25 to 14.50
Compressed sheet steel	14.50 to 14.75
Railroad wrought	14.25 to 14.50
Railroad malleable	18.25 to 18.75
Light bundled sheet stampings	12.75 to 13.00
Steel axle turnings	15.00 to 15.25
No. 1 cast	19.00 to 19.25
No. 1 busheling	14.00 to 14.25
Drop forge flashings	12.50 to 12.75
Railroad grate bars	14.50 to 15.00
Stove plate	14.50 to 15.00
Pipes and flues	12.50 to 12.75

Philadelphia

Plate Prices Advanced Several Dollars a Ton —Bars and Shapes Firmer

PHILADELPHIA, Nov. 11.—Optimism is somewhat in advance of actual business, but prices generally are manifesting greater strength than for some time. While it is felt that the corner has been turned and the buyers' market of many months is showing more of the seller factor, sellers are not certain thus far of their position. A feature of the post-election market has been the effort of makers of plates to stabilize prices at a level more in accord with quotations on bars and shapes. Advances have ranged from \$3 to \$5 per ton, as makers increased quotations from the low level of recent weeks to a minimum of 1.70c. per ton, Pittsburgh, and 1.80c. per ton on smaller business. A fair volume of orders, however, was taken by various mills at the lower price. There was much interest in the Pennsylvania Railroad purchase of 9000 tons of plates. These were divided among several eastern Pennsylvania mills at 1.65c., f.o.b. mill.

The pig iron market continues its upward tendency and the \$20.50 base on No. 2 plain is claimed by sellers to have entirely disappeared, even on lots for this year's delivery.

Pig Iron.—Prices are showing considerably more stability than for some time, and \$21 base is generally asked, with \$21.50 the usual quotation on first quarter business. A few furnaces are holding for \$22 for first quarter, but thus far have booked no business at this price. Inquiry continues in fair volume and is comparable with the consumer interest of the past fortnight. Tonnages under quotation range from a few hundred tons up to as high as 5000 tons. Basic is strong and the \$19.50 price is believed to have entirely disappeared, the minimum quotation obtainable today on first quarter tonnages being \$20, base.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25	
sil.	\$21.76 to \$22.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 23.13
East. Pa. No. 1X	22.76 to 23.63
Virginia No. 2 plain, 1.75 to 2.25	
sil.	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.67 to 29.17
Basic delivered eastern Pa.	21.00 to 22.00
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	23.50 to 24.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferroalloys.—Ferromanganese is unchanged at \$100 per ton, seaboard, for British and \$100, furnace, for domestic. Transactions are confined to small lots. Spiegeleisen is quoted at \$31 to \$32 per ton, furnace.

Plates.—The most decided change of the past week came in the upward movement of plate prices, reported to have been instituted by one eastern Pennsylvania plate mill, which withdrew prices on about 6000 tons of inquiries and announced an advance of about \$4 per ton. Other eastern Pennsylvania mills accepted lower priced

business under quotation but have since advanced to a basis of 1.70c. to 1.80c. per lb., Pittsburgh. An outstanding lot purchased at the lower prices was divided between several eastern Pennsylvania mills by the Pennsylvania Railroad at a price reported to have been 1.65c., f.o.b. mill. Bars purchased at the same time are understood to have been closed at 1.90c. at mill. The plate market is considered by sellers to be firm today at 1.70c., base, Pittsburgh, with 1.80c. the average price on smaller tonnages.

Structural Material.—The market has developed enough activity to contrast favorably with the lagging of previous weeks. Shapes are firm at 1.85c. to 1.90c. per lb., Pittsburgh, and it is rather generally doubted that the 1.80c. basis could now be obtained, except on highly satisfactory business.

Bars.—Current inquiry is active and 2c., Pittsburgh, is pretty firmly held, although 1.90c., mill, was recently done on a round tonnage placed with several different eastern Pennsylvania mills by the Pennsylvania Railroad. Iron bars are still nominal at 2c., Pittsburgh.

Billets.—While there has been no change in quotations, rerolling billets holding at \$36 and forging billets at \$41 per ton, Pittsburgh, despite a continued absence of activity, concessions are no longer believed to be obtainable.

Sheets.—The market is firmer and blue annealed are quotable today at 2.60c. to 2.70c. per lb., base, the lower price being firm and the tendency toward 2.70c. Black and galvanized sheets are steady at 3.50c. per lb. and 4.60c. per lb. base, respectively.

Warehouse Business.—Concessions from current quotations have practically ceased and the market is strong, although business has not developed in volume beyond recent weeks. Cold-rolled material is now steady at 4.05c. for rounds and 4.55c. for squares, flats and hexagons.

Old Material.—Low phosphorus grades are showing greater activity and prices are strong on all grades. Bids on railroad lists are reported higher and although price changes are few, the tendency is upward. Heavy melting steel is unchanged at \$17 to \$17.50 per ton. Machine shop turnings are \$14 to \$14.50 and stove plate and railroad grate bars are \$15 to \$15.50 per ton. Brokers report increasing difficulty in obtaining material at present prices, dealers with yards and producers of scrap, as a rule, insisting upon holding out for an advance in prices. On the other hand, consumers are not inclined to enter into new contracts at higher than current quotations, as they are still receiving shipments on old contracts.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$17.00 to \$17.50
Scrap rails	16.50 to 17.00
Steel rails for rolling.....	18.50
No. 1 low phos., heavy 0.04 and under	21.00 to 21.50
Couplers and knuckles.....	20.00 to 20.50
Rolled steel wheels.....	20.00 to 20.50
Cast-iron car wheels.....	17.50 to 18.00
No. 1 railroad wrought.....	18.00 to 18.50
No. 1 yard wrought.....	16.50 to 17.00
No. 1 forge fire.....	14.00 to 14.50
Bundled sheets (for steel works)	14.00 to 14.50
Mixed borings and turnings (for blast furnace use).....	12.50 to 13.50
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use).....	14.50 to 15.00
Heavy axle turnings (or equivalent)	15.00 to 16.00
Cast borings (for steel works and rolling mills)	14.50 to 15.00
Cast borings (for chemical plants)	16.50 to 17.00
No. 1 cast.....	17.50 to 18.00
Heavy breakable cast (for steel plants)	16.00 to 16.50
Railroad grate bars.....	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	24.00 to 25.00
Steel axles	24.00 to 25.00

Imports.—In the week ended Nov. 8, 1033 tons of manganese ore came into the port of Philadelphia, 1000 tons from India and 33 tons from Germany. A total of 15,600 tons of French African iron ore is reported as well as 2100 tons of chrome ore from Cuba; 3450 tons of pig iron from the United Kingdom and 1000 tons from India and 96 tons of steel shapes from Belgium.

Pittsburgh Iron and Steel Market

(Concluded from page 1303)

for higher prices in view of the fact that they are commanding much higher relative prices in other consuming districts and in Detroit, where offerings are scant, due to the fact that the Ford Motor Co. now is consuming its own production. We note a sale of 2500 tons of hydraulic compressed sheets at \$18, Steubenville. There is not much action in other grades, nor any particular change in prices. Dealers still are paying high prices for railroad steel. Heavy melting steel offered by the Pennsylvania Railroad in its November list is reported to have brought \$20.75 per gross ton, Pittsburgh, while a small lot sold by the Pittsburgh & Lake Erie Railroad brought a price equivalent to \$20.06, this district, and a lot sold by the Bessemer & Lake Erie Railroad sold at \$18.50, Greenville, Pa. A local producer of railroad track accessories was able to get \$19, mill, for a lot of new steel scrap. The Norfolk & Western Railway will take bids until noon, Nov. 12, on 7467 gross tons of old material.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	\$19.50 to \$20.00
No. 1 cast, cupola size.....	18.00 to 18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.50 to 20.00
Compressed sheet steel	17.50 to 18.00
Bundled sheets, sides and ends.....	16.50 to 17.00
Railroad knuckles and couplers.....	20.50 to 21.00
Railroad coil and leaf spring.....	20.50 to 21.00
Low phosphorus blooms and billet ends	23.00 to 23.50
Low phosphorus plate and other material	22.00 to 22.50
Railroad malleable	16.50 to 17.00
Steel car axles.....	21.00 to 21.50
Cast iron wheels.....	18.50 to 19.00
Rolled steel wheels	20.50 to 21.00
Machine shop turnings.....	15.50
Sheet bar crops	20.50 to 21.00
Heavy steel axle turnings.....	16.00 to 16.50
Short shoveling turnings	15.00
Heavy breakable cast.....	16.00 to 16.50
Stove plate	15.00 to 15.50
Cast iron borings	15.00
No. 1 railroad wrought.....	16.00 to 16.50
No. 2 railroad wrought.....	19.50 to 20.00

Pig Iron and Old Material Stronger in Detroit

DETROIT, Nov. 11.—With the election over, melters have been turning attention to their needs and the majority in this district have covered for their first quarter requirements on pig iron, with a resultant strengthening in the market on this material. The market on old material is likewise showing an upward turn and with several mills advanced from 50c. to \$1 per ton.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting steel	\$15.00 to \$16.00
Shoveling steel	15.00 to 16.00
Borings	12.00 to 13.00
Short turnings	12.00 to 13.00
Long turnings	11.50 to 12.50
No. 1 machinery cast	16.00 to 17.00
Automobile cast	17.50 to 18.50
Hydraulic compressed	12.75 to 13.50
Stove plate	14.00 to 15.00
No. 1 busheling	13.00 to 14.00
Sheet clippings	10.00 to 10.75
Flashings	10.50 to 12.00

Scrap Higher Than Basic Pig Iron in Youngstown Market

YOUNGSTOWN, Nov. 11.—For the third time this year, dealers have forced the price of heavy melting steel scrap higher than basic pig iron. Since the election, heavy melting has advanced in this district from \$18 to \$20, but the increase was brought about in the absence of any appreciable buying by melters. This compares with a price of \$19 for basic iron, Valley furnace.

Speculation by dealers is held largely responsible for the advance, which melters claim is unwarranted.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
Nov. 5.....	13.62½	13.37½	53.62½	8.90	8.87½	6.92½	6.57½
6.....	13.75	13.50	53.37½	8.90	8.87½	6.95	6.60
7.....	13.75	13.50	53.75	8.90	8.87½	6.97½	6.62½
8.....	13.75	13.50	.....	8.90	8.87½	7.00	6.65
10.....	13.87½	13.50	54.12½	8.90	8.87½	7.05	6.70
11.....	13.87½	13.62½	54.37½	8.90	8.87½	7.07½	6.72½

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Nov. 11.

No large flood of orders has followed the election, but the markets are all active and strong. Copper is steadily advancing on good buying. Tin is higher, due largely to an appreciation of the pound sterling. Lead continues active but easy, while zinc has advanced quite sharply.

Copper.—Several factors contribute to the strength of the copper market. Both domestic and foreign buying is large and the position of sellers is so favorable that they are not anxious sellers. For the first time in many months, also, the market here is acting independently of quotations in London. The main strength of the market, however, is in domestic buying. Some large sellers of copper are known to have made foreign sales recently at prices slightly under those prevailing to domestic consumers. The advance in prices last week, and in fact for two or three weeks has been gradual but steady. Electrolytic copper today is quoted at a minimum of 13.87½c., delivered, with some sellers asking 14c. There are even predictions of 15c. copper before many weeks. Lake copper is quoted at 13.87½c., delivered.

Tin.—Prices of Straits tin have advanced moderately, but they have not reached the heights expected. Predictions before the election were that the bull movement would continue, accompanied by much higher prices. The restraining influence is said to be the fact that the Federated Malay States have not sold as much of the war stocks as was expected. Only 325 tons of these is said to have been disposed of. The fact that the heavy sales that have been made from that quarter may mean increased output have somewhat upset confidence. The advance in sterling, therefore, is given as the main cause of the present higher prices. The market has been moderately active. For the week ended Friday, Nov. 7, about 400 to 500 tons changed hands, about equally distributed between dealers and consumers. Saturday was dull, but yesterday consumers were the principal buyers, with sales variously estimated at between 250 and 400 tons. Today the market has been moderately active, with spot Straits tin quoted at 54.37½c., New York. Prices in London today were a little lower than a week ago, with spot standard quoted at £258 15s., future standard at £261 15s. and spot Straits at £260 5s. The Singapore price yesterday was £263 5s. Arrivals thus far this month have been 2890 tons, with 4320 tons reported afloat. An interesting fact bearing on the market's future is an admission by consumers themselves that they must buy more tin and are really waiting for orders.

Lead.—The situation is changed but little since last week. The market is moderately active with the leading interest taking some business at its contract price of 8.65c., New York. Prices in the outside market, while higher, are wide in their range, depending upon the relations between buyers and sellers in various cases. The range at New York is from 8.80c. to 9c., and that at St. Louis from 8.75c. to as high as 9c.

Zinc.—Prices for prime Western zinc continue to advance, due mainly to sustained demand from foreign consumers. Domestic buying is also satisfactory. For

early delivery quotations today are 6.72½c. to 6.75c., St. Louis, or 7.07½c. to 7.10c., New York.

Nickel.—Shot and ingot nickel in wholesale lots are quoted unchanged at 29c. to 30c. per lb., with electrolytic nickel quoted at 33c.

Antimony.—Due partly to the fact that less antimony by 50 per cent is afloat than normally, the Chinese brand in wholesale lots is quoted today at 14c. to 14.50c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., duty paid, delivered.

Old Metals.—Inquiry is active and business good, with the market slowly advancing. European demand for scrap is especially heavy. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible.....	13.25
Copper, heavy and wire.....	12.25
Copper, light and bottoms.....	10.75
Heavy machine composition.....	10.25
Brass, heavy.....	8.75
Brass, light.....	7.00
No. 1 red brass or composition turnings..	9.00
No. 1 yellow rod brass turnings.....	8.375
Lead, heavy.....	8.00
Lead, tea.....	6.75
Zinc.....	4.25
Cast aluminum.....	17.50
Sheet aluminum.....	17.50

Chicago

Nov. 11.—Copper, tin, zinc and antimony have advanced. A continued advance in copper is looked for in view of steady demand. Foreign demand for zinc keeps up, thereby giving that metal support. Lead is holding its own, but material for December delivery is selling for less than the spot metal. Antimony is strong in view of the fact that practically no shipments are being received from China, the largest single source of supply. Most of the old metals have also advanced. We quote in carload lots: Lake copper, 14.25c.; tin, 55c.; lead, 9.15c.; spelter, 6.75c.; antimony, 15.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9.50c.; red brass, 8.50c.; yellow brass, 7.25c.; lead pipe, 7.75c.; zinc, 4.25c.; pewter, No. 1, 26c.; tin foil, 32c.; block tin, 43c.; all buying prices for less than carload lots.

Birmingham Blast Furnaces Break Records in October

BIRMINGHAM, ALA., Nov. 11.—Several blast furnaces in the Birmingham district broke records in October, the single furnace of the Central Iron & Coal Co., at Holt, in Tuscaloosa County, not only producing a larger quantity of pig iron but a better quality than ever before. This last named furnace has been in blast more than 802 days and last month produced 10,367 tons of iron. The best previous record was in September, 1922, when 10,352 tons were made. The consumption of coke last month was 2614 tons to the ton of iron. No cast during October exceeded 0.050 sulphur, hence no off-grade iron was produced. Of the total 332 tons was of 3.25 to 3.75 per cent silicon; 2244 tons, 2.75 to 3.25 per cent silicon; 5365 tons, 2.25 to 2.75 per cent silicon; 2248 tons, 1.75 to 2.25 per cent silicon, while 178 tons was of 1.25 to 1.75 per cent silicon. The famous No. 1 blast furnace of the Tennessee Coal, Iron & Railroad Co., at Ensley, produced 19,451 tons of iron last month, compared with 18,310 tons in March, 1923. The total production of iron by the Tennessee company in October was 127,925 tons as compared to 127,864 tons in March, 1923.

The new high school to be built by the city of Pittsburgh in the Squirrel Hill section of that city is to be named for Taylor Allderdice, vice-president National Tube Co., Pittsburgh. Mr. Allderdice for several years was a member of the Pittsburgh Board of Education and the naming of the school for him is in recognition of his service which was so active and unstinted.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mills, base, per lb.....1.80c. to 1.90c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.00c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2.00c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.00c. to 2.10c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb.....2.00c.
Rail steel bars f.o.b. Chicago district mills, base, per lb.....2.00c.
Common iron bars delivered New York, base, per lb.....2.34c.
Common iron bars f.o.b. Chicago, base, per lb.....2.10c.
Refined iron bars f.o.b. P'gh mills, base, per lb.....2.90c. to 3.00c.
Common iron bars delivered Philadelphia, base, per lb.....2.32c.

Hot-Rolled Flats

(Pittsburgh)

Hoops, base, per lb.....2.50c.
Bands, base, per lb.....2.40c. to 2.50c.
Strips, base, per lb.....2.25c. to 2.40c.

Cold-Finished Steel

Bars and shafting, f.o.b. P'gh mills, base, per lb.....2.70c.
Bars and shafting f.o.b. Chicago mills, base, per lb.....2.70c.
Screw stock, Worcester mills, base, per lb.....2.90c.
Shafting, ground, f.o.b. mill, base, per lb.....3.10c.
Screw stock, base, per lb., Cleveland.....2.75c.
Strips, f.o.b. P'gh mills, base, per lb.....4.00c.
Strips, f.o.b. Cleveland mills, base, per lb.....4.60c.
Strips, f.o.b. Chicago mills, base, per lb.....4.30c.
Strips, f.o.b. Worcester mills, base, per lb.....4.15c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....\$2.75
Bright plain wire, base, No. 9 gage, per 100 lb.....2.50
Annealed fence wire, base, per 100 lb.....2.65
Galvanized wire No. 9, base, per 100 lb.....3.10
Galvanized barbed, base, per 100 lb.....3.45
Galvanized staples, base, per keg.....3.45
Painted barbed wire, base, per 100 lb.....3.20
Polished staples, base, per keg.....3.20
Cement coated nails, base, per count keg.....\$2.05 to 2.10
Woven wire fence, base, per net ton to retailers.....\$65.00

Chicago district mill prices are \$2 per ton above the foregoing and Chicago delivered prices are \$3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mills \$3 a ton higher on products of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mills.....2.60c. to 2.70c.
*Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist mills.....2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.50c.
*No. 28 (base) per lb., f.o.b. Chicago dist. mills.....3.60c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.4.50c. to 4.60c.
*No. 28 (base) per lb., f.o.b. Chicago dist mills.....4.70c.

Tin-Mil Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.50c.
*No. 28 (base) per lb., f.o.b. Chicago dist mills.....3.60c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.60c. to 4.75c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

*Add 5c. per 100 lb. for delivery in Chicago.

Tin Plate

Standard cokes, per base box f.o.b. Pittsburgh district Mills.....\$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind.....5.60

Terne Plate

(F.o.b. Pittsburgh, district mills)
(Per Package, 20 x 28 in.)

8-lb coating, 100 lb. base.....\$11.00	20-lb. coating I. C.....\$14.90
8-lb. coating I. C.....11.30	25-lb. coating I. C.....16.20
12-lb. coating I. C.....12.70	30-lb. coating I. C.....17.35
15-lb. coating I. C.....13.95	35-lb. coating I. C.....18.35
	40-lb. coating I. C.....19.35

Rivets

Large, f.o.b. P'gh and Cleveland mill, base, per 100 lb..\$2.60
Large, f.o.b. Chicago mills, base, per 100 lb.....2.75
Small, f.o.b. P'gh and Cleveland mills

70, 10 and 5 per cent off list
Small, f.o.b. Chicago mills.....70, 10 and 5 to 70 and 10 off list

Rails and Track Equipment

(F.o.b. mill)

Rails, standard, per gross ton.....\$43.00
Rails, light, billet, base, per lb.....1.80c. to 1.90c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, 1/2 in. and larger, base, per 100 lb.....\$2.70 to \$3.00
Spikes, 1/2 in. and smaller, base, per 100 lb.....3.00
Spikes, boat and barge, base, per 100 lb.....3.00
Track bolts, all sizes, base, per 100 lb.....3.75 to 4.00
Track bolts, heat treated, base, per 100 lb.....4.25 to 4.50
Tie plates, per 100 lb.....2.40 to 2.50
Angle bars, base, per 100 lb.....2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Inches	Steel Black	Galv.	Inches	Iron Black	Galv.
1/2	45	19 1/2	1/2 to 3/4	+11	+39
3/4	51	25 1/2	3/4	22	2
1	56	42 1/2	1	28	11
1 1/4	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

Butt Weld, extra strong, plain ends

1/2	41	24 1/2	2 to 3	61	50 1/2
3/4 to 1	47	30 1/2	3/4 to 1	+11	+54
1 1/4	53	42 1/2	1 1/4	21	7
1 1/2	58	47 1/2	1 1/2	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 1/2 points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2 1/2 points less.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel	Charcoal Iron
2 to 2 1/2 in.....27	1 1/2 in.....+18
2 1/2 to 2 3/4 in.....37	1 3/4 to 1 1/2 in.....+8
3 in.....40	2 to 2 1/4 in.....2
3 1/4 to 3 3/4 in.....42 1/2	2 1/4 to 3 in.....7
4 to 13 in.....46	3 1/4 to 4 1/2 in.....9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.....55-58	3 and 3 1/4 in.....36-39
1 1/4 and 1 1/2 in.....47-50	3 1/2 and 3 3/4 in.....37-40
1 3/4 in.....31-34	4 in.....41-44
2 and 2 1/4 in.....22-25	4 1/2 in. and 5 in.....33-37
2 and 2 3/4 in.....32-35	

Hot Rolled

3 and 3 1/4 in.....38-41	4-in.....43-46
3 1/2 in. and 3 3/4 in.....39-42	

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40, base.....83 to 85 per cent off list

Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

Cents per Ft.	Cents per Ft.
2-in. O.D. 12 gage....15	2 1/4-in. O.D. 10 gage....20
2-in. O.D. 11 gage....16	3-in. O.D. 7 gage....35
2-in. O.D. 10 gage....17	1 1/4-in. O.D. 9 gage....15
2 1/4-in. O.D. 12 gage....17	5 1/2-in. O.D. 9 gage....55
2 1/4-in. O.D. 11 gage....18	5 1/2-in. O.D. 9 gage....57

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron.....	\$5.65
Old range non-Bessemer, 51½ per cent iron.....	4.90
Mesabi Bessemer, 55 per cent iron.....	5.40
Mesabi non-Bessemer, 51½ per cent iron.....	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian.....	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron.....	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal.....	42c.
Manganese ore, ordinary, 48 per cent manganese from the Caucasus.....	40c.
Manganese ore, Brazilian or Indian, nominal.....	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates.....	\$8.00 to \$8.50
Chrome ore, basic, 48 per cent Cr ₂ O ₃ , crude, per ton, c.i.f., Atlantic seaboard.....	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₂ , New York.....	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville.....	\$3.00 to \$3.10
Foundry coke, f.o.b. Connellsville.....	4.00 to 4.50
Mine run steam coal, f.o.b. W. Pa. mines.....	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines.....	1.60 to 1.85
Mine run gas coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.....	1.00 to 1.10
Gas slack, f.o.b. W. Pa. mines.....	1.15 to 1.30

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$100.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.....	100.00
Ferrosilicon, 50 per cent, delivered.....	70.00 to 75.00
Ferrosilicon, 75 per cent.....	140.00
Ferrotungsten, per lb. contained metal.....	87c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered.....	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.....	10.50c.
Ferrovanadium, per lb. contained vanadium.....	\$3.50 to \$4.00
Ferrocobaltititanium, 15 to 18 per cent, per net ton.....	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated.)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$30.00 to \$32.00
Spiegeleisen, domestic, 16 to 19 per cent.....	29.00 to 31.00
Ferrosilicon, Bessemer, 10 per cent, \$39.50; 11 per cent, \$42; 12 per cent, \$44.50; 14 to 16 per cent (electric furnace), \$36.00.	
Silvery iron, 5 per cent, \$27.00; 6 per cent, \$28.00; 7 per cent, \$29.00; 8 per cent, \$29.00 to \$30.00; 9 per cent, \$32.50; 10 per cent, \$34.50; 11 per cent, \$37.00; 12 per cent, \$39.50.	

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines.....	\$17.50
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.....	18.50
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per gross ton.....	19.75

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania.....	\$40.00 to \$42.00	\$36.00 to \$40.00
Maryland.....	45.00 to 47.00	40.00 to 42.00
Ohio.....	40.00 to 43.00	37.00 to 39.00
Kentucky.....	42.00 to 43.00	37.00 to 39.00
Illinois.....		37.00 to 42.00
Missouri.....	42.00 to 45.00	35.00 to 40.00
Illinois.....	42.00 to 45.00	
Ground fire clay, per net ton.....	6.00 to 7.00	

Silica Brick:

Pennsylvania.....	33.00
Chicago.....	43.00 to 44.00
Birmingham.....	50.00
Ground silica clay, per net ton.....	7.50 to 8.00

Magnesite Brick:

Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00

Chrome Brick:

Standard size, per net ton.....	45.00
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Bolts and Nuts

(F.o.b. Chicago and Pittsburgh)

Machine bolts, small rolled threads... 60 and 20 per cent off list	
Machine bolts, all sizes, cut threads... 60 and 20 per cent off list	
Carriage bolts, smaller and shorter, rolled threads... 60 and 20 per cent off list	

Carriage bolts, cut threads, all sizes.....	60 per cent off list
Eagle carriage bolts.....	65, 10 and 10 per cent off list
Lag bolts.....	70 per cent off list
Flow bolts, Nos. 1, 2 and 3 heads.....	50, 10 and 5 per cent off list
Other style heads.....	20 per cent extra
Machine bolts, c.p.c. and t. nuts, ½ x 4 in.	

Larger and longer sizes.....	50, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....	4.50c. off list
Hot-pressed nuts, blank or tapped, hexagons.....	5 per cent off list
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.50c. off list
Eagle carriage bolts.....	65, 10 and 10 per cent off list
Flow bolts.....	50, 10 and 5 per cent off list
Semi-finished hex. nuts:	

½ in. and smaller, U. S. S.....	80, 10, 10 and 5 per cent off list
¾ in. and larger, U. S. S.....	75, 10, 10 and 5 per cent off list
Small sizes, S. A. E.....	80, 10, 10 and 5 per cent off list
S. A. E., ½ in. and larger.....	80, 10 and 5 per cent off list
Stove bolts in packages.....	80, 10 and 5 per cent off list
Stove bolts in bulk.....	80, 10, 5 and 2½ per cent off list
Tire bolts.....	60 and 10 per cent off list
Bolt ends with hot pressed nuts.....	60 and 10 per cent off list
Bolt ends with cold pressed nuts.....	50 and 10 per cent off list
Washers.....	6.00c. to 6.25c. off list
Lock washers.....	80 per cent off list

Foregoing prices are quoted f.o.b. Cleveland by Cleveland manufacturers for Cleveland delivery.

Semi-Finished Castellated and Slotted Nuts

(F.o.b. Chicago and Pittsburgh)

(To jobbers and consumers in large quantities)

Per 1000			Per 1000		
	S. A. E.	U. S. S.		S. A. E.	U. S. S.
1/4-in.	\$4.25	\$4.25	1/4-in.	\$13.25	\$13.50
3/8-in.	4.90	4.90	3/8-in.	16.25	16.50
1/2-in.	5.90	6.25	1/2-in.	22.50	23.00
3/4-in.	7.50	8.50	3/4-in.	34.00	34.00
1-in.	9.75	10.00	1-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

(F.o.b. shipping point.)

Milled hex. cap screws.....	85 and 10 per cent off list
Milled standard set screws, case hardened.....	85 and 10 per cent off list
Milled headless set screws, cut thread.....	85 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread.....	85, 10, 10 and 5 per cent off list
Upset hex. head cap screws, S. A. E. thread.....	85, 10, 10 and 5 per cent off list
Milled studs.....	80 and 10 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$35.50 to \$36.00
Forging billets, ordinary carbons.....	40.50 to 41.00
Sheet bars, Bessemer.....	37.00 to 37.50
Sheet bars, open hearth.....	37.00 to 37.50
Slabs.....	35.50 to 36.00
*Wire rods, common soft, base, No. 5 to ¾-in.....	45.00 to 46.00
Wire rods, common soft, coarser than ¾-in.....	\$2.50 over base
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid.....	15.00 per ton over base
Skelp, grooved, per lb.....	1.90c. to 2c.
Skelp, sheared, per lb.....	1.90c. to 2c.
Skelp, universal, per lb.....	1.90c. to 2c.

*Chicago mill base is \$48.00.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100lb.
2100* (¾% Nickel, 10 to 20 per cent Carbon)...	\$3.00 to \$3.35
2300 (¾% Nickel).....	4.75
2500 (5% Nickel).....	6.00 to 6.50
3100 (Nickel Chromium).....	3.45 to 3.75
3200 (Nickel Chromium).....	5.50 to 5.75
3300 (Nickel Chromium).....	7.25 to 8.00
3400 (Nickel Chromium).....	6.50 to 7.00
5100 (Chromium Steel).....	8.50 to 8.75
5200* (Chromium Steel).....	7.50 to 8.00
6100 (Chromium Vanadium bars).....	4.50
6100 (Chromium Vanadium spring steel).....	4.25 to 4.50
9250 (Silicon Manganese spring steel).....	3.50 to 3.75
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium).....	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....	4.25 to 4.50
Chromium Molybdenum bars (0.30—1.10 Chromium, 0.25—0.40 Molybdenum).....	4.25 to 4.50
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....	3.75 to 4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold drawn bars is 1c. to 1½c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates on Finished Steel from Leading Producing Centers to Various Consuming Points

THE IRON AGE will publish from time to time freight rates on pig iron and finished material, giving special attention to the latter on account of the increased interest due to the abolition by the U. S. Steel Corporation and some independents of the Pittsburgh plus custom. Rates of importance are so numerous that all cannot be published in one issue of **THE IRON AGE**.

Freight Rates on Steel Pipe, Carloads, in Cents per 100 Lb.

Destination	Producing Points, Indiana Harbor, Ind.; Evanston, Ill.	Destination	Producing Points, Indiana Harbor, Ind.; Evanston, Ill.
Indianapolis, Ind.	25	Wichita, Kan.	58 1/2
Peoria, Ill.	15 1/2	Topeka, Kan.	44 1/2
St. Louis, Mo.	17 1/2	Tulsa, Okla.	69
Kansas City, Mo.	35	Muskogee, Okla.	69
Milwaukee, Wis.	8	Little Rock, Ark.	56
Omaha, Neb.	35	Madison, Wis.	11 1/2
Davenport, Iowa; Rock Island, Ill.; Moline, Ill.	17 1/2	Green Bay, Wis.	20 1/2
Cincinnati	28	Manitowoc, Wis.	20 1/2
Detroit	27 1/2	Grand Rapids, Mich.	26
Minneapolis, St. Paul; St. Paul, Minn.	27 1/2	Kalamazoo, Mich.	22
Aberdeen, S. D.	55	Jackson, Mich.	25 1/2
Fargo, N. D.	53 1/2	Flint, Mich.	42
Butte, Mont.	100	Memphis, Tenn.	100
Des Moines, Iowa	29 1/2	Seattle, Wash.	100
Waterloo, Iowa	27 1/2	Spokane, Wash.	100
Lincoln, Neb.	40	Portland, Ore.	100
Denver, Colo.	82	San Francisco	100
		Los Angeles	100
		Salt Lake City, Utah.	95

Freight Rates on Sheets and Tin Plate, Carloads, in Cents per 100 Lb.

Destination	Producing Point, Gary, Ind. Sheets	S. & T. P. Tin Plate
Indianapolis	25	..
Peoria, Ill.	13	..
St. Louis	17 1/2	..
Kansas City, Mo.	41 1/2	..
Milwaukee, Wis.	8	..
Omaha, Neb.	41 1/2	..
Davenport, Iowa; Moline, Ill.; Rock Island, Ill.	15 1/2	..
Cincinnati	28	..
Detroit	27 1/2	..
Minneapolis, St. Paul.	27 1/2	..
Aberdeen, S. D.	51	..
Fargo, N. D.	57	64
Butte, Mont.	100	75
Des Moines, Iowa	29 1/2	32 1/2
Waterloo, Iowa	27 1/2	30 1/2
Lincoln, Neb. ....	..	46 1/2
Denver, Colo.	83	72
Wichita, Kan.	80 1/2	72
Topeka, Kan. ....	..	51
Tulsa, Okla.	76 1/2	73
Muskogee, Okla.	76 1/2	73
Little Rock, Ark.	56	87
Madison, Wis. ....	..	9 1/2
Green Bay, Wis.	20 1/2	21
Manitowoc, Wis.	20 1/2	21
Grand Rapids, Mich. ....	..	26
Kalamazoo, Mich. ....	..	22
Jackson, Mich. ....	..	25 1/2
Flint, Mich. ....	..	29
Memphis, Tenn. ....	..	42
Seattle, Wash.	100	75
Spokane, Wash.	100	75
Portland, Ore.	100	75
San Francisco	100	75
Los Angeles	100	75
Salt Lake City, Utah.	95	75

Rates on Wire and Wire Products from Western Mills in Cents per 100 Lb. Producing Point

Destination	Joliet, Ill.	Waukegan, Ill.	De Kalb, Ill.	Duluth, Minn.
Indianapolis	25	28	27	48 1/2
Peoria, Ill.	17 1/2	17 1/2	15 1/2	30 1/2
St. Louis	21 1/2	21 1/2	21 1/2	39 1/2
Kansas City, Kan., Mo.	41 1/2	41 1/2	41 1/2	47 1/2
Milwaukee, Wis.	8	6 1/2	11 1/2	30 1/2
Omaha, Neb.	41 1/2	41 1/2	41 1/2	41 1/2
Davenport, Iowa; Rock Island, Ill.; Moline, Ill.	21 1/2	21 1/2	17 1/2	30 1/2
Cincinnati	28	31	30	55 1/2
Detroit	27 1/2	30 1/2	31	52
Minneapolis, St. Paul.	27 1/2	27 1/2	27 1/2	15 1/2
Aberdeen, S. D.	51	51	51	45
Fargo, N. D.	57	57	57	36
Butte, Mont.	130 W. W. fencing	130 W. W. fencing	130 W. W. fencing	90 wire
	100 wire	100 wire	100 wire	117 W. W. fencing
	125 wire mesh reinforcing	125 wire mesh reinforcing	125 wire mesh reinforcing	
Des Moines, Iowa	29 1/2	29 1/2	26 1/2	30 1/2
Waterloo, Iowa	27 1/2	27 1/2	27 1/2	30 1/2
Lincoln, Neb.	46 1/2	46 1/2	46 1/2	46 1/2
Denver	84 wire	84 wire	84 wire	84 wire
	102 W. W. fence and wire mesh	102 W. W. fence and wire mesh	102 W. W. fence and wire mesh	102 W. W. fencing and wire mesh
Wichita, Kan.	69	69	69	83
Topeka, Kan.	51	51	51	57
Tulsa, Okla.	69	69	69	92
Muskogee, Okla.	69	69	69	92
Little Rock, Ark.	46	46	46	69
Madison, Wis.	11 1/2	11 1/2	11 1/2	30 1/2
Green Bay, Wis.	20 1/2	20 1/2	20 1/2	27 1/2
Manitowoc, Wis.	20 1/2	20 1/2	20 1/2	27 1/2
Grand Rapids, Mich.	26	29	30 1/2	48
Kalamazoo, Mich.	22	27		
Jackson, Mich.	25 1/2	25 1/2	27	48
Flint, Mich.	29	32	32 1/2	48
		30 1/2 all rail car ferry		49 1/2
Memphis, Tenn.	42	45	42	
Seattle, Wash.	(1) 100	(1) 100	(1) 100	(2) 90
Spokane, Wash.	(1) 100	(1) 100	(1) 100	(2) 90
Portland, Ore.	(1) 100	(1) 100	(1) 100	(2) 90
San Francisco, Cal.	(1) 100	(1) 100	(1) 100	(1) 100
Los Angeles, Cal.	(1) 100	(1) 100	(1) 100	(1) 100
Salt Lake City, Utah.	(3) 95	(3) 95	(3) 95	(3) 95

1—Rate on woven wire fencing, \$1.30 per 100 lb.; wire mesh reinforcement, \$1.25 per 100 lb.
 2—Rate on woven wire fencing, 1.17 per 100 lb.; wire mesh reinforcement, 1.13 per 100 lb.
 3—Rate on woven wire fencing, 1.28 per 100 lb.; wire mesh reinforcement, 1.25 per 100 lb.

PERSONAL

George F. Eldridge, vice-president the B. Nicoll Co., New York, has resigned after having been connected with the business for 24 years. Mr. Eldridge was for many years connected with the firm of B. Nicoll & Co., which was incorporated upon the death of Mr. Nicoll in 1921.

Dr. Carl Benedicks, director of the Metallographic Institute of Stockholm, Sweden, will deliver the annual lecture before the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers at its annual meeting, the third week in February, 1925. Later Dr. Benedicks will visit several of the leading universities of the country, as well as some of the local chapters of the American Society for Steel Treating, and deliver addresses.

Paul J. Driscoll has been appointed Philadelphia district sales manager of the Penn Seaboard Steel Corporation and the Tacony Steel Co., with offices in the Franklin Bank Building, Philadelphia.

C. G. Schluederberg, assistant manager of the supply sales department, Westinghouse Electric & Mfg. Co., has been elected chairman of the Pittsburgh Chapter, American Electrochemical Society, and C. J. Rodman of the research department of the same company, secretary-treasurer.

Wilbert M. Smith has resigned from active management of the L. C. Smith & Brothers Typewriter Co., Syracuse, N. Y., to become chairman of directors of the Syracuse Trust Co.

Thomas Adams has tendered his resignation as president of the Ashland Steel Co., Ashland, Ky. L. R. Putnam, who has been general manager of the company, also resigned his position, effective Nov. 1. Mr. Putnam will engage in the industrial insurance field. I. P. Blanton, president Belfont Steel & Wire Co., and vice-president of the Ashland Steel Co., will have direction of the affairs of the company until the annual meeting in January. The Belfont company now controls two-thirds of the stock of the Ashland company.

William H. Knowles has been appointed advertising manager of the McMyler Interstate Co., Cleveland. He was formerly associated with the Overhead Electric Traveling Crane Association and later with the Aluminum Co. of America.

Glenn D. Evans, who was connected with the J. F. Buhr Machine Tool Co. for many years, has again joined the organization as chief engineer. Mr. Evans has been chief engineer of the Climax Engineering Co., Los Angeles, Cal., for the past three years.

T. J. Boyd, for the past 15 years associated with the Boston office of the Niles-Bement-Pond Co., has been transferred to the Philadelphia office, where he will be factory representative of the Pratt & Whitney Co. sales.

Theodore Pilger of Butte, Mont., has been appointed trade commissioner to Berlin. A graduate of the Montana School of Mines, Mr. Pilger has had an extensive career as a mining and mechanical engineer, sales engineer and geologist.

K. E. Steinhauer, attorney-examiner of the Federal Trade Commission, who acted as counsel throughout the Pittsburgh plus proceedings, has resigned. He left Washington on Friday of last week for Los Angeles, Cal., where he has accepted a position as manager of a mortgage company.

George L. Markland, president Philadelphia Gear Works, Inc., also president of the American Gear Manufacturers' Association, was elected mayor of Stone Harbor, N. J., on Nov. 4. Mr. Markland has a summer home at Stone Harbor. His popularity may be judged from the fact that although he is a Republican his name was placed on the Democratic ticket because there was no other place for it and he won a signal victory in a Republican stronghold.

Hans Thyssen of the well known firm of Thyssen & Co., Muelheim, Germany, arrived in New York this week, accompanied by several representatives of the Thyssen group of iron and steel works. They will investigate the possibilities of the American market as an outlet for German steel products. The plants in the Thyssen group have an annual capacity of 1,700,000 tons of pig iron and 1,300,000 tons of steel ingots.

W. W. Macon, managing editor of THE IRON AGE, returned to New York on the Olympic this week, after a European trip of several weeks.

H. W. Thompson, formerly sales manager for Barons & Oliver, has been elected a vice-president of the George T. Trundle Engineering Co., Cleveland, in charge of promotion. He will assume his duties with that company on Dec. 1.

Dr. G. Bulle, chief engineer of the fuel economy department of the German Iron and Steel Institute, Düsseldorf, is visiting the leading steel plants of the United States to study American furnace practice. He would like to receive catalogs of firms building gas producers, open-hearth, heating and annealing furnaces and rolling mill equipment, and may be addressed at the Fort Pitt Hotel, Pittsburgh.

Charles Piez, chairman Link-Belt Co., Chicago, has been elected president of the Illinois Manufacturers' Association.

OBITUARY

HENRY S. WILLIAMS, Rosemont, Pa., president Williams, Brown & Earle, Inc., Philadelphia, manufacturer of scientific instruments, dropped dead of heart disease, Nov. 2, while witnessing the football game between the University of Pennsylvania and Lafayette. He was 71 years of age.

PAUL H. SCHELL, Baltimore district sales agent of the Poldi Steel Corporation of America, died at his home in Baltimore on Nov. 1. Death resulted from pneumonia after an illness of about five days.

FREDERICK J. COOLEY, vice-president and manager of the Windsor Foundry Corporation, Windsor, Vt., died suddenly at the Mary Hitchcock Hospital in Hanover, N. H., on Nov. 1. He was born in 1876, the son of William Cooley of Waterbury, Vt., a large pioneer builder of stationary and marine gas engines. At the age of 20, Mr. Cooley began his apprenticeship with the Cooley Mfg. Co. After several years as dealer in trucks, Mr. Cooley and his brother, William, Cooley organized the Windsor Foundry Corporation, supplying gray iron castings to machine tool builders.

EDWARD H. UTLEY, vice-president and general manager Bessemer & Lake Erie Railroad, a subsidiary of the United States Steel Corporation, died at his home in Pittsburgh on Nov. 8. He was general freight agent for the Carnegie Steel Co. from 1889 until 1901, when he assumed the position he held at the time of his death.

DUNCAN M. ANDERSON, secretary Frick & Lindsay Co., maker of mill, mine and oil well supplies, Pittsburgh, died at his home in Sewickley, Pa., Oct. 6. He was born in Ohio 50 years ago. In early life he became associated with his uncle, John A. Roebling, the bridge builder, and about 15 years ago, when the John A. Roebling's Sons Co., Trenton, N. J., acquired the Frick & Lindsay Co., Mr. Anderson went to Pittsburgh as secretary of the latter company.

ARTHUR HOWARD of the Chicago sales organization of American Sheet & Tin Plate Co. died Nov. 7 of apoplexy at his home in Wilmette, Ill. He was 48 years of age, having been born at Hyde Park, Mass., in 1876. He had been identified with the Chicago office of the Steel Corporation subsidiary for 14 years and prior to that was stationed at St. Louis. Mr. Howard was also manager of the Vandergrift mill for several years. Prominent in civic activities, he was president of the Wilmette School Board and during the war was captain of the Home Guard.

Ryerson Buys Interest in Reed-Smith Steel Co.

Stockholders of Joseph T. Ryerson & Son, Inc., have purchased a substantial interest in the Reed-Smith Co. at Nineteenth and South Canal Streets, Milwaukee. The Reed-Smith Co. is a steel warehousing company carrying a large and varied line of finished steel products in stock.

Under the new plan the officers of the Reed-Smith Co. of Milwaukee are: D. M. Ryerson, president; George W. Smith, vice-president and general manager; E. L. Hartig, treasurer; Carl Gal-lauer, secretary.

The Milwaukee stocks and facilities of the Reed-Smith Co. are soon to be increased. In addition, Joseph T. Ryerson & Son will maintain practically daily car service from Chicago for prompt delivery of special orders and sections that are carried only in the largest warehouses.

Joseph T. Ryerson & Son, Inc., is the largest independent steel warehousing organization in the country, operating six plants, at Chicago, St. Louis, Cincinnati, Detroit, Buffalo and New York.



D. M. RYERSON

District Manager of Taylor-Wharton Iron & Steel Co.

Thomas K. Scott has been appointed mid-western sales manager of the Taylor-Wharton Iron & Steel Co., High Bridge, N. J. He will be located at Denver. His experience in mining extends over several years, beginning with 1904 when he entered Columbia School of Mines. Before completing his course of study he left college in order to take up work for the Cumberland Ely Copper Co. of Nevada. In 1908 he re-entered Columbia School of Mines and completed his course, receiving the degree of engineer of mines. Besides the Cumberland Ely company he also has been connected with the Inspiration Copper Co. and with the Miami Copper Co. He was chief mining engineer of Miami up to the time of his resignation last August.



T. K. SCOTT

Plans of Alloy Metal Wire Co.

The Alloy Metal Wire Co., manufacturer of resistance wires, pure nickel, Monel metal and other nickel alloys, with offices in the Grand Central Terminal Building, New York, and wire mills located at Yonkers, N. Y., recently purchased the plant of the Du Pont Motors Co. at Moore, Pa., a suburb of Philadelphia. This property is located on the main line of the Pennsylvania Railroad, New York and Washington Division, and contains approximately seven acres, on which is a modern plant of steel and brick construction, covering 75 x 300 ft., the main part being three stories. In addition to this are a power house and warehouse. The company recently installed three new annealing furnaces, one new 3-ton electric crane, 10 new continuous fine wire drawing machines, 10 wire mill trucks, one new power hack saw, one circular saw, as well as new electrical equipment. The company expects to move its general offices to its new plant on or about Dec. 1. The original cost of this property, exclusive of machinery, was \$250,000.

The Kenneweg Motors Corporation, 331 Fourth Avenue, Pittsburgh, has been incorporated to manufacture combustion engines. Announcement of plans will be made as soon as a definite program has been decided upon. C. H. Kenneweg is president and H. D. Montgomery, vice-president and treasurer.

Trade Changes

J. S. Pendleton, district representative in New York for the Falcon Steel Co., Columbia Steel Co., Franklin Steel Works, and the Standard Gauge Steel Co., has opened a Boston office which will carry the some representation in the New England territory.

The Gibb Instrument Co., Bay City, Mich., manufacturer of electric welding and electric heating equipment, announces the appointment of H. V. Beronius as representative in Iowa, Kansas, Nebraska, Oklahoma, and Northwestern Missouri. His headquarters will be 33 Linwood Terrace, Kansas City, Mo.

The Superior Steel Corporation, maker of hot and cold rolled strip steel, Detroit, has moved to 10-252 General Motors Building.

The Standard Gauge Steel Co., Beaver Falls, Pa., manufacturer of finished steel specialties, has moved its Chicago office to 547 Webster Building, 327 South LaSalle Street, S. A. Dinsmore, district sales manager.

The Whiting Corporation, Harvey, Ill., has opened a district sales office at 997 Ellicott Square Building, Buffalo, to succeed its former agent, Geo. F. Crivel & Co., Buffalo. The new office will be in charge of W. R. Hans.

L. E. Sanger, who has been executive head of A. I. Sanger & Son, scrap iron dealers, Cleveland, has opened an office at 918 Hanna Building, Cleveland, and will deal in steel sheets, strips, plates and washer and stamping material.

The American Crane Co., Friendship, N. Y., has appointed John L. Barry, Jr., 30 Church Street, New York, representative in the New York district on sales of electric and hand-power cranes and electric hoists.

The Ferro Manganese Co. has moved from 341 Montgomery Street to 582 Market Street, San Francisco.

The Pacific Diesel Engine Co. has moved from the Insurance Exchange Building to 593 Market Street, San Francisco.

The Copperweld Steel Co. has opened an office at 116 New Montgomery Street, San Francisco.

The Climax Engineering Co. has moved from Seventeenth and Folsom Streets to 75 Fremont Street, San Francisco.

The Rapid Machine Works has opened an office at 555 Francisco Street, San Francisco.

Frazar & Co. announce that Glowacki R. Parker and Leighton H. Peebles have withdrawn from membership in the firm. Richard F. Warner and Everett W. Frazar will continue the business under the present name.

The Foote Bros. Gear & Machine Co. has opened sales offices as follows: 321 North Twenty-first Street, Birmingham; 740 Commonwealth Ave., Boston; Jackson Building, Buffalo; 3221 Scranton Road, Cleveland; 1275 Broadway, Denver; 120 Prince Street, Montreal, Canada, Darling Bros. in charge; 316 Caswell Block, Milwaukee; 100 Greenwich Street, New York; 617 Arch Street, Philadelphia; 1306 Keenan Building, Pittsburgh; 817 Lewis Building, Portland, Ore.; Ingersoll, Rochester, N. Y.; 405-07 Franklin Avenue, St. Louis; National Equipment Co., Salt Lake City, Utah; 1143 Henry Building, Seattle, Wash; 632 Nasby Building, Toledo, Ohio and Palmer Electric Co., Detroit.

E. D. Giberson & Co., 40 Rector Street, New York, agents for pipes and tubes and other steel products, have established an office to handle Cuban business in the Royal Bank of Canada Building, Havana, Cuba, in charge of D. L. Monjo. In addition to handling pipes and tubes of American make, the company is agent on all steel products for Thyssen & Co. in the United States and Cuba.

The K-K Accessory Mfg. Co., 1213 East Thirteenth Avenue, Denver, has been organized to manufacture automobile accessories. Operations are not on a quantity production basis as yet, but the company is outlining a country-wide distribution program and plans to erect a plant in the summer of 1925. At that time the company will be in the market for materials and equipment. Present manufacturing is being done by contract. Ernest W. Kummer is president and George C. Keech, vice-president.

The Rhode Island Heating & Equipment Corporation, 99 Broad Street, Providence, R. I., has been organized to manufacture oil burners. Parts will be machined in a local shop, the company maintaining an assembling plant. Fred R. Mott is president and Edmund M. Sartorius is treasurer.

The Eagle Iron & Brass Foundry, Monroe and Second Streets, Passaic, N. J., recently incorporated, will manufacture iron, brass and aluminum castings. The company has a considerable capacity which is now in operation.

The plant and much of the machinery of the American Laundry Machinery Co., Lincoln Park, Rochester, N. Y., were destroyed by fire on Oct. 27. The loss has been estimated at \$500,000.

Machinery Markets and News of the Works

TONE OF MARKET BETTER

Volume of Sales Unchanged but Inquiries Increase

Sheet Metal Equipment Wanted by Kansas City Manufacturer—Burlington Asking for Prices

ALTHOUGH there has been little, if any, change in the volume of sales made during the week, the tone of the market has improved perceptibly since the election, and there has been a healthy increase in the number of inquiries received. However, greatly improved conditions are not to be expected, perhaps, until after the new year, as inventory time is approaching and many large buyers have expended their appropriations for the year.

A Kansas City company has issued a list of equip-

ment for use in the manufacture of sheet steel oil storage tanks. The list, which is given in full in the Chicago district report below, includes shearing machines, welding apparatus and special sheet metal machinery.

The Burlington has asked for prices for estimating purposes on approximately 30 items for its subsidiary, the Fort Worth & Denver City Railway Co. The same company is inquiring also for two car-axle journal lathes and a 30 in. radial drill. The Chicago & Northwestern Railway Co. is preparing a list which may be issued before the close of the year.

The Union Metal Products Co., Chicago, is inquiring for forging machinery as an addition to the list published last week.

The Federal Can Co., Nashville, Tenn., is in the market for equipment to be used in the manufacture of steel drums. Two 22-in. lathes are wanted by the Universal Portland Cement Co., Buffalo.

New York

NEW YORK, Nov. 11.

INDUSTRIAL users of machine tools are becoming more active and to a certain extent taking the place recently occupied by the railroads as buyers of tools, generally single items. Sellers are handling more inquiries than for the several weeks prior to election and the general tone of the market is one of optimism. Probably the remaining two-thirds of the list of tools from the Chesapeake & Ohio will be closed around the first of the year when the necessary appropriation is received. The Norfolk & Western has closed on an axle lathe. Recent industrial purchasers have included the Brady Brass Co., Jersey City, N. J., a car-box borer; the International Supply Co., Cambridge, Mass., a 250-lb. steam hammer; the Day-Evans Iron Works, Birmingham, a 42-in. carwheel borer, and the American Steel & Wire Co., a 44-in. boring and turning mill.

Bids will be received by the Board of Trustees, Municipal Building, Larchmont, N. Y., until Nov. 20 for the following equipment: Two motor-driven vertical centrifugal pumps, 500,000-gal. daily capacity; one gasoline-driven horizontal centrifugal pump, 1,000,000 gal. daily capacity; two 750-gal. per min. motor-driven, vertical centrifugal sludge pumps; eight ejectors with eight motor-driven air compressors; four air-driven direct acting sump pumps; one motor-driven blower, capacity 7600 cu. ft. per min. free air; two motor-driven blowers, capacity 50 cu. ft. per min. free air, and complete chlorinating apparatus. Nicholas S. Hill, Jr., 122 East Nineteenth Street, New York, is consulting engineer. Charles H. Reisig is president of the board.

The Todd Ship Yards Corporation, 25 Broadway, New York, has filed plans for a one-story machine shop, 100 x 150 ft., at 134-50 Twenty-fourth Street, Brooklyn, estimated to cost \$55,000 including equipment. The Tilt-Hargan Co., 90 West Broadway, New York, has the building contract.

Contract has been awarded J. W. Hennessey, 126 White Street, Saratoga, N. Y., by the Iroquois Paper Co., Schuylerville, N. Y., for a two-story addition, 60 x 100 ft., to cost about \$45,000.

Charles E. Birge, 25 West Thirty-fourth Street, New York, architect, has plans for a five-story automobile service, repair and garage building at 749-59 Atlantic Avenue, Brooklyn, estimated to cost \$400,000 including equipment.

Louis A. Sheinart, 194 Bowery, New York, architect,

has plans for a two-story automobile service, repair and garage building, 50 x 160 ft., at 401-5 Pearl Street, estimated to cost \$100,000 with equipment.

R. Graham, Middletown, N. Y., architect, has completed plans for a two-story and basement automobile service, repair and garage building on St. James Street, Kingston, 50 x 100 ft., to cost approximately \$75,000.

The DeForest Radio Co., Franklin Street, Jersey City, N. J., manufacturer of wireless instruments and equipment, has arranged for a capital stock issue of \$1,575,000, a portion of the proceeds to be used for expansion in plant facilities. During recent months the capacity of the works has been more than doubled. Theodore Luce is president.

The Cities Service Power & Light Co. has been organized to take over the electric light and power properties of the Cities Service Co., 60 Wall Street, New York, located in Ohio, Colorado, Missouri, Kansas and other states. The new company will be operated by Henry L. Doherty and associates, address noted, who have arranged for a bond issue of \$20,000,000, a portion of the proceeds to be used for extensions and improvements. Henry L. Doherty is president of the new organization.

Manual training equipment will be installed in the three-story junior high school to be erected on Mamaroneck Avenue by the Board of Education, White Plains, N. Y., at an estimated cost of \$250,000. Another school at 3 Post Road, estimated to cost \$100,000, also will use manual equipment. Plans for both projects are in the hands of Tooker & Marsh, 101 Park Avenue, New York. P. E. Dougherty is president of the board.

The New-Type Wrenches Corporation, incorporated with \$50,000 capital stock, will manufacture a new design of pipe wrench. Manufacturing will be done by contract and the company will maintain an assembling plant. Address in care of Mr. Walder, Goldstein & Walder, 1133 Broadway, New York.

Work will begin at once on a top addition to the building at Broad and Astor Streets, Newark, for the New York Auto Top & Supply Co., to be 63 x 117 ft., estimated to cost \$45,000. Joseph J. Powlewka Co., 553 Grove Street, Irvington, Newark, has the building contract.

The Matthews Co., 101 Arlington Street, Newark, N. J., manufacturer of silverware, metal goods, etc., has given a general contract to Hoppe & Schroder, 32 Whitney Street, Newark, for a one and two-story plant at Irvington, to cost \$35,000. Allen & Bartlett, 1091 Sanford Avenue, architects, prepared the plans.

The Board of Education, Madison, N. J., plans the installation of manual training equipment in the high school to be erected on Main Street, estimated to cost \$225,000, for which plans were prepared by Guilbert & Battelle, architects, 30 Branford Place, Newark.

Buffalo

BUFFALO, Nov. 10.

THE Pierce, Butler & Pierce Mfg. Corporation, James Street, Syracuse, N. Y., manufacturer of heating apparatus, has awarded a general contract to R. J. Gillespie, Jacksonville, Fla., for a one-story factory branch and distributing plant near the Seaboard Air Line Railroad, Jacksonville, to cost approximately \$95,000 with equipment.

The Condee Hardware Co., Watertown, N. Y., has plans for a one-story addition to its plant on Public Square, brick, 44 x 66 ft. Lansing & Green, Sherman Building, Watertown, are the architects.

The Board of Education, 123 East Manlius Street, Syracuse, plans the installation of manual training equipment in its two-story high school at East Syracuse to cost approximately \$200,000. M. L. King, 602 Snow Building, Syracuse, is the architect.

The Real Co., Inc., 312 South Warren Street, Syracuse, N. Y., is reported in the market for an air compressor and a gas engine.

Fire, Oct. 25, destroyed a portion of the plant and equipment of the Lawless Paper Co., Penfield, N. Y., with a loss of \$75,000. Plans for rebuilding are under advisement.

Contract has been awarded to Chapman & Graham, 132 Blackstone Avenue, Jamestown, for a two-story brick addition to the plant of the Salamanca Furniture Co., Salamanca, N. Y., to cost \$50,000, for which wood-working machinery, transmission and conveying equipment will be required.

Philadelphia

PHILADELPHIA, Nov. 10.

PLANS are being prepared by the Philadelphia & Reading Railway Co., Philadelphia, for the erection of new car and locomotive shops near Reading, Pa., designed to replace the present East Penn shops, to be dismantled and removed to the new location.

The Arguto Oilless Bearing Co., 149 West Berkley Street, Philadelphia, has awarded a general contract to the Robert E. Lamb Co., 843 North Nineteenth Street, for an addition to its plant.

Bids will be received by the York Water Co., York, Pa., until Nov. 18 for new equipment for the local waterworks and pumping station, including one horizontal, cross-compound pumping engine, steam-turbine, centrifugal pumping unit with daily capacity of 8,000,000 gal., and one water-tube boiler, approximately 280-hp. capacity. Fuller & McClintock, 600 Walnut Street, Kansas City, Mo., are engineers.

The Girard Colliery, Gerardsville, Pa., has preliminary plans for rebuilding the portions of its plant destroyed by fire Nov. 2 with loss of \$25,000, including boiler house, coal-handling equipment and conveyors.

Motors, power equipment, conveying apparatus, etc., will be installed in the new printing plant of the Telegraph Printing Co., Federal Square, Harrisburg, 140 x 160 ft., one and one-half stories, estimated to cost \$85,000.

The Fisk Flap-Tube Co., 15 East State Street, Trenton, N. J., will build a one-story plant, 50 x 150 ft., estimated to cost \$65,000 with equipment.

The United & Globe Rubber Mfg. Co., Prospect and Frazier Streets, Trenton, has been acquired by Peter Vrendenburg, Trenton, and associates for \$250,000. The new owner is reported to be planning to operate for the manufacture of tires and other rubber goods and will make improvements and machinery replacements in different departments.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: 42788, from Manuel Brothers, Bajabonico, Dominican Republic, desiring to get in touch with American manufacturers of motor-driven blowers for the separating of grain; 42790, from S. G. Sykiotis, The Bourse, Athens, Greece, interested in getting in contact with American manufacturers of machines for applying steel strapping to boxes; 42818, from Julio Alvarado, San Jose, Costa Rica, wishing to communicate with manufacturers of steam furnaces and equipment for baking; 42791, from Mario G. Aguirre H., Quezaltenango, Guatemala, interested in manufacturers of hardware products, small tools, agricultural machinery, etc.; 42821, from Rodolfo Neubach, Casilla Correo 859, Balcarce 641, Buenos Aires, Argentina, desiring to get in contact with manufacturers of heavy hardware products, iron, bronze and plated tubing, round and square, wooden tool handles, traps, stamped metal ceilings, electro-medical apparatus, agricultural implements and machinery; 42822 from C. A. Papavassiliou, Samos, interested in machines for hulling and polishing rice and production of starch; 42824, from Juan Emilio

Capurro, Post Office Box No. 351, Sandusky, Ohio, for iron sheets, cast iron pipe, black steel conduit pipe, wire, electrical specialties, etc.; 42832, from Bhagwan Dial & Brothers, Mainpuri, India, wishing to get in contact with manufacturers of culverts, electrical apparatus, etc.; 42833, from J. Edward Maruri G. Galle Malecon 2104, Guayaquil, Ecuador, for iron and steel products, and 42838, from Augusto Alpizar & Hermanas, North Side of El Sagrario, San Jose, Costa Rica, desiring to communicate with manufacturers of road machinery, saw mill equipment, agricultural implements and machines, railroad and tramway cars and supplies.

Tunick Brothers & Kaplan, 720 South Eleventh Street, Philadelphia, manufacturers of paper boxes and containers, have awarded contract to L. Cherrey, 17 North Second Street, for a three-story addition, 90 x 90 ft. William L. Charr, 149 South Fourth Street, is architect.

C. F. Schaefer, 11 South Sixteenth Street, Philadelphia, architect, has plans for a two-story automobile service, repair and garage building, 60 x 66 ft., at 1502-8 Thompson Street, estimated to cost \$65,000.

Work will soon begin on the two-story and basement printing plant for the Pottstown News, Hanover Street, Pottstown, Pa., 70 x 90 ft., to cost \$120,000 with equipment. A. S. Kepner, 121 North Hanover Street, Pottstown, is architect, and Johnson & Schuyler, 211 Fuller Building, Philadelphia, associate architects. W. S. Binder is president.

The American Ice Co., Thirtieth Street and Columbia Avenue, Philadelphia, has awarded contract to Sutton & Stephenson, 1317 Washington Avenue, for alterations and additions to its plant, estimated to cost \$45,000 with equipment. C. Leslie Weir, 41 East Forty-second Street, New York, is architect.

The R. H. Beaumont Co., 319 Arch Street, Philadelphia, has been awarded contract for complete coal handling equipment of the Columbia Power Co., Miami Fort Station, near Cincinnati. About 400 tons of steel is involved in the project.

New England

BOSTON, Nov. 11.

IN the week preceding the national election buying of machine tools in this district came practically to a standstill. Since election sentiment in machine tool circles has grown decidedly optimistic, yet sales continue few in both new and used equipment. Optimism therefore is based largely on hopes of business.

An unbiased analysis of these hopes does not appear to justify the extent of optimism in some machine tool houses. There is no inquiry that even suggests a list of equipment. It is felt in the trade, however, that the aggregate equipment wanted amounts to many thousand dollars and that if the business can be concentrated among a few houses a sizable profit for each will result. On the other hand, competition, as is always the case in dull times, is exceptionally keen and the little business passing is split up among a large number of dealers.

The Pettingell-Andrews Co., 522 Atlantic Avenue, Boston, electrical specialties, has awarded contract to the W. M. Evatt Co., 200 Devonshire Street, for its nine-story plant on Stuart Street, 100 x 150 ft., on which work will soon begin. A. H. Bowditch, 44 Bromfield Street, Boston, architect, prepared the plans.

Work is in progress on the new mill for the Nashua River Paper Co., Pepperell, Mass., to cost \$100,000 with machinery. H. L. Shattuck, Inc., Manchester, has the building contract.

The Stilphen Motor Co., 395 Columbia Road, Boston, has filed plans for the erection of an automobile service, repair and garage building on site adjoining its present works estimated to cost \$75,000 with machinery.

The Thompson Electric Welding Co., 161 Pleasant Street, Lynn, Mass., will build a one-story addition to its works to cost about \$50,000 with machinery. Contract has been awarded the Fuller Construction Co., 31 Milk Street, Boston.

B. F. Perkins & Son, Inc., Holyoke, Mass., manufacturer of paper and pulp machinery, etc., will erect a four-story factory, 76 x 154 ft., for which plans were prepared by Lockwood, Greene & Co., 24 Federal Street, Boston, architect.

The Union Spinning & Plating Co., Inc., 67 Sudbury Street, Boston, Mass., has inquiries out for an 18-in. swing lathe, ball-bearing type.

The Town Building Committee, Arlington, Mass., will purchase a number of tools and shop equipment to be installed at the new machine shop for the fire department.

The Crane Market

Inquiries for single cranes have been rapidly accumulating since the election, so that this prospective business promises continued activity until the close of the year. In addition to these smaller inquiries there is the pending business from such companies as the J. G. White Engineering Co., 43 Exchange Place, New York, for a 50-ton electric and a 10-ton hand power crane; the New York Edison Co., a 200-ton overhead crane; the Phoenix Utility Co., 71 Broadway, New York, about to issue inquiry for a 100-ton crane; the American Car & Foundry Co., asking for a 10-ton, 47-ft. span electric crane, and the Brooklyn Edison Co., reported asking for three electric hoists of 2-tons and 3-tons capacity. The New London Ship & Engine Co., Groton, Conn., is reported to have closed on some overhead cranes. The Morgan Construction Co., Worcester, Mass., is reported to have closed on two 10-ton electric cranes, but the report cannot be confirmed. The Mill Power Supply Co., Birmingham, has closed on a 100-ton, 42-ft. span, 4-motor overhead crane.

In the Pittsburgh district sentiment seems to have im-

proved more rapidly than actual business. There is a fair volume of pending business and estimating prices are being asked by the Jones & Laughlin Steel Corporation for its Memphis warehouse and its projected plant at Hammond, Ind. The Carnegie Steel Co. is also asking for estimating prices. Among recent purchases are:

Public Service Production Co., Newark, N. J., a gantry crane handling a 3-cu. yd. bucket for ash pit service at Kearny, N. J., from the Cleveland Crane & Engineering Co.

Chapman Valve Co., Indian Orchard, Mass., about 1000 ft. of tramrail and electric hoists from the tramrail division of the Cleveland Crane & Engineering Co.

Atlanta Ice & Coal Corporation, Atlanta, Ga., a 6-ton, 25-ft. span, single I-beam hand power crane, from the Chisholm & Moore Mfg. Co.

Thompson & Binger, 103 Park Avenue, New York, a 1-ton wall jib crane and two 2½-ton underhung hand power cranes of short spans, from the Richards-Wilcox Mfg. Co.

The Boston Elevated Railway Co., 31 St. James Avenue, Boston, Mass., has awarded contract to the J. F. Griffin Co., 15 Exchange Street, Boston, engineer, for a one-story power house, 90 x 200 ft., at Forest Hill, to cost about \$65,000 with equipment.

The C. O. Jelliff Mfg. Corporation, Southport, Conn., is in the market for two second-hand rolls, 43 to 54 in. face and 16 to 20 in. in diameter.

The Kansas City Southern Railroad is in the market for a coach and truck wheel, 54-in. lathe, 500-lb. steam hammer and a 32-in. shaper.

The Mobile & Ohio Railroad is in the market for one 500 cu. ft. compressor.

Arthur L. Mullergren, Gates Building, Kansas City, Mo., consulting engineer, will prepare plans for a municipal light, power and central heating system, for the City of Faribault, Minn. A bond issue of \$450,000 will be arranged. S. M. Andrews is city recorder.

St. Louis

ST. LOUIS, Nov. 10.

THE City Council, Appleton, Mo., has plans in preparation for a municipal waterworks, including pumping equipment, estimated to cost \$100,000, for which Burns & McDonnell, 402 Interstate Building, Kansas City, are engineers.

The Kelley-Reppert Motor Co., Locust and Admiral Streets, Kansas City, Mo., has acquired adjoining property for the erection of a two-story addition for automobile service and parts department. Eugene Reppert is president.

The Derby Oil Co., Orpheum Building, Wichita, Kan., is having plans drawn for a one-story and basement building, 100 x 100 ft., for the production of lubricating oils, to cost \$65,000 with equipment.

Manual training equipment will be installed in the three-story and basement high school to be erected at Wymore, Neb., for which contract has been awarded to G. H. Robertson, First National Bank Building, Lincoln, Neb. It will be 100 x 170 ft. and cost \$200,000. Fiske & McGinnis, 533 Bankers Life Building, Lincoln, are architects.

Plans are under consideration by the Wakefield Electric Co., Wakefield, Neb., for rebuilding its electric light plant and the installation of alternating current with estimated cost of \$55,000.

Russell & Crowell, Chemical Building, St. Louis, architects, have plans for a one-story automobile service, repair and garage building, 85 x 260 ft., estimated to cost \$125,000 with machinery.

The Stewart Sand Co., 615 American Bank Building, Kansas City, Mo., has awarded contract to the Swenson Construction Co., Shubert Theater Building, for its new works to cost \$100,000 with equipment. Hans Von Unwerth, 708 Finance Building, is consulting engineer.

The American Ice Co., Kansas City, Mo., has foundation work in progress on a new one-story and basement ice-manufacturing plant, 80 x 220 ft., for which contract was recently awarded to John Gosling, 242 Railway Exchange Building, Kansas City. It will cost \$65,000 complete. F. W. Horton, 708 Finance Building, is architect.

The Kansas City Steel & Wire Co., Rialto Building, Kansas City, Kan., has acquired the former plant of the McKenna Steel Working Co., Twelfth Street and the Terminal tracks, Armourdale District, and will make alterations and install considerable new machinery. Two one-story buildings, 80 x 250 ft., and 100 x 150 ft., will be constructed and equipped with 3 and 10-in. mills, cooling beds, hydraulic presses and wire and nail machinery. Two 50-ton open-hearth furnaces will be installed. The work will involve an expenditure of approximately \$550,000. L. W. Conroy is general manager.

The Board of Education, Tulsa, Okla., has commissioned Leland I. Shumway, architect, 725 New Wright Building, to prepare plans for its two-story and basement, manual arts building, estimated to cost \$135,000 with equipment.

Chicago

CHICAGO, Nov. 10.

WHILE there has been no perceptible change in the volume of machine tool business since the election, sentiment has improved materially. Among the railroads, the Chicago & North Western is preparing a list which may be issued before the close of the year and the Burlington has asked for prices for estimating purposes on approximately 30 items for its subsidiary, the Fort Worth & Denver City. While it is improbable that the railroads will do much buying the remainder of this year, they are all busy preparing their budgets for 1925 with the likelihood that extended lists will be issued during the first quarter. One of the most encouraging developments in the past week has been an increase in scattered orders for single machine tools.

The Ajax Motors Co., Racine, Wis., is still the most conspicuous buyer in this market. With the purchase of crankshaft and camshaft grinding machines, it has completed its buying of special equipment, amounting to approximately \$350,000, and is now ready to take action on standard tools. The Union Metal Products Co., Chicago, is inquiring for a forging machine, a bull dozer and two trimming presses, in addition to the machines mentioned in the issue of Nov. 6. The Burlington is inquiring for two car axle journal lathes and has also asked for prices on a 30-in. radial drill for the Valler Coal Co. The Federal Can Co., Nashville, Tenn., is in the market for equipment for the manufacture of steel refillable drums with 8-in. screw caps. C. R. Huston, 434 North Oakley Street, Kansas City, Mo., has issued a list of equipment for manufacturing horizontal and vertical oil storage tanks of sheet steel welded construction. The Universal Portland Cement Co. is in the market for two 22-in. engine lathes for its Buffington, Ind., works.

C. R. Huston List

- One set of rolls for forming sheets.
- One combined circular cutting and flanging machine.
- One hand shear, minimum capacity 72 in.
- One power shear, minimum capacity 72 in.
- One alligator shearing machine.
- One metal slitting shearing machine.
- One small power drill press.
- One power hacksaw for cutting 4-in. and smaller pipe and couplings.
- One 200-lb. generator.
- Equipment for four acetylene welded stations.

One small power foot punch press from material 1/4-in. and lighter.
 One 1/2 or 3/4-ton chain hoist.
 One air drill.
 Welding frames for holding tank sheets in place after they have been butted together for welding.
 Sheet metal machinery for fabricating diversified line of sheet metal products made in accordance with blue prints and specifications submitted, to include gasoline blow torches, soldering equipment, hand brake, serpentine shear and any other equipment necessary to fabricate miscellaneous line of sheet metal products.

The Chicago Nut Co., 2513 West Cullerton Street, Chicago, has awarded contract for a three-story factory, 53 x 120 ft., at 2927-29 West Cullerton Street, to cost \$40,000.

G. A. Schmidt, 3737 North Clark Street, Chicago, has awarded contract for a one-story factory, 80 x 100 ft., for the construction of wood and metal parts for automobiles, at the rear of 3745-55 North Clark Street, to cost \$15,000.

The Bauer Taxicab Mfg. Co., 115 East Thirtieth Street, Chicago, recently incorporated, has leased a plant at 3021-23 South Michigan Avenue, and will manufacture taxicabs and trucks. It is in the market for machine tools and equipment. Officers include Perry S. Bauer, president; Harry B. Louer, treasurer; Oscar Blumenthal, secretary; and Harold M. Marks, vice-president.

The Haynes & Kinder Co., manufacturer of advertising signs, 2250 West Chicago Avenue, Chicago, has awarded contract for a one-story plant, 120 x 125 ft., to cost \$140,000.

Joseph T. Ryerson & Son, Sixteenth & Rockwell Streets, Chicago, is adding two new warehouse spans to the north group of its Chicago plant. The spans measure 72 x 360 ft., and 100 x 280 ft., and will be served by three traveling cranes. The new buildings are of modern steel construction with brick fronts and concrete tile roofs, and will house part of the reinforcing department, as well as provide additional space for structural stock.

The Delta-Star Electric Co., manufacturer of high tension electrical equipment, 2437 Fulton Street, Chicago, has purchased property, 125 x 200 ft., on Artesian Street, north of Fulton Street, and 125 x 216 ft., on Campbell Street, north of Fulton. The sites were acquired for expansion.

The Acme Match Corporation, 609 Lyceum Building, Duluth, Minn., will soon award contracts for a new two-story factory, 100 x 150 ft., estimated to cost \$80,000, for which plans were prepared by Holstead & Sullivan, 410 Palladio Building, Duluth, architects.

The Domestic and Foreign Commerce Department, Chicago Association of Commerce, 10 South La Salle Street, has received the following inquiries: 4145, from a company in Tokio, Japan, desiring to get in touch with American manufacturers of hardware, tools, road-making machinery, saw-mill equipment, railroad supplies; 4147, from a concern in Cartagena, Colombia, for machinery to manufacture roofing tiles; 4153, interested in wire, enameled products, and hardware; 4134, from a company in Tokio, Japan, interested in blue-printing machinery and equipment.

The Jefferson Electric Mfg. Co., 403 South Green Street, Chicago, manufacturer of electrical specialties, has leased a four-story and basement building, 112 x 115 ft., at Green and Congress Streets, for a new plant.

The Cement Products Co., Spencer, Iowa, is contemplating rebuilding the portion of its cement mill recently destroyed by fire with loss of about \$50,000.

The Sinko Tool Mfg. Co., 1632 North Halsted Street, Chicago, will soon begin work on a one-story plant, 92 x 95 ft., on Crawford Street, to cost \$45,000 with equipment. Melvin A. Nelson, 1720 North California Avenue, Chicago, is architect.

The Rowe Mfg. Co., Galesburg, Ill., is in the market for four oil engines, 65 to 125 hp. each, with pumps attached.

The Illinois Shipping Container Co., 1302 West Division Street, Chicago, will soon make awards for its one-story factory, 100 x 171 ft., at 1529 West Pershing Road, to cost \$65,000 with equipment. M. L. Wolff is president. A. Epstein, 2001 Pershing Road, Chicago, architect, prepared the plans.

The Northern Machinery Co., Minneapolis, Minn., plans to purchase a 10-ft. power squaring shear for handling 1/4-in. plates.

Indiana

INDIANAPOLIS, Nov. 10.

VONNEGUT, BOHN & MUELLER, 610 Indiana Trust Co. Building, Indianapolis, Ind., architects, have plans for a two-story and basement automobile service, repair and garage building at 113 East Maryland Street, Indianapolis, estimated to cost \$200,000 with equipment.

Fire, Oct. 29, destroyed a portion of the mill of the J. R. Dunlap Co., Columbus, manufacturer of sash, doors, etc., with loss estimated at \$60,000 including equipment.

The Crane Co., 836 South Michigan Avenue, Chicago, has awarded contract to the M. J. Hoffman Construction Co., Furniture Building, Evansville, for its two-story and basement factory branch and distributing plant at Evansville, estimated to cost \$50,000. Shopbell, Fowler & Thole, Furniture Building, are architects. R. E. Burget is local manager.

Fire, Nov. 3, damaged the works of the Root Glass Co., Terre Haute, Ind., with loss of \$100,000. Plans are under way for rebuilding.

The Steel Scaffolding Co., Missouri and Governor Streets, Evansville, Ind., will build two additions to its plant, 30 x 50 ft., and 25 x 30 ft., respectively, for which plans have been prepared by Frank J. Schlotter, Evansville, architect.

The Indianapolis Bolster Spring Co., Indianapolis, is in the market for a plate shear with capacity of 48 x 1 in. and 24 x 1 1/4 in.; also a shear for 12 x 2-in. flats and 4-in. squares, and a geared or hydraulic press to punch 8-in. disks through 1-in. plate.

Cincinnati

CINCINNATI, Nov. 10.

WHILE orders fell off the past week, there was a healthy increase in the number of inquiries, compared with previous weeks, and if even a small part of these develop into orders, enough business will be in sight to enable manufacturers to increase operations for the rest of the year. The more conservative manufacturers of machine tools, however, do not look for greatly improved conditions until after the new year. The general situation is regarded as satisfactory, and since the election a noticeably improved tone to general business is evident.

Reports of large German buying of machine tools in this country are apparently unfounded, though several representatives of German manufacturers are touring the country inspecting machine tool plants, and in some cases placing orders for highly specialized machines. Railroads have been buying a fair number of tools, mostly in lots of one and two, and industrial buying also has been fair. The automotive industries are showing more interest, and it is expected that much business will be placed from this source during the next few months.

An increase in production costs is expected, and some manufacturers of castings have advanced prices 1/2c. per lb. It is thought that these increases will be reflected in machine tool prices, and one lathe manufacturer has already advanced quotations 10 per cent, with others contemplated before Jan. 1.

The John Duerr Co., Pomeroy, Ohio, which recently purchased the H. D. Moorehead Builders Supply Co., Zanesville, Ohio, has plans for the erection of a planing mill, for which wood-working equipment will be required. John Duerr heads the company.

The General Body Mfg. Co., Defiance, Ohio, recently incorporated, will take over the plant of the Defiance Motor Truck Co., and build automobile bodies, more especially for buses and funeral cars. S. N. Arni, Bellefontaine is president.

The National Cash Register Co., Dayton, Ohio, has plans in progress for the erection of an eight-story factory addition, estimated to cost \$3,000,000 with equipment.

The Board of Education, Marietta, Ohio, plans the installation of manual training equipment in its three-story high school, 171 x 257 ft., estimated to cost \$450,000, for which contract has been awarded to E. H. Latham, Columbus. Garber & Woodward, 2803 Union Central Building, Cincinnati, are architects.

The Common Council, Watertown, Tenn., plans the installation of pumping equipment, tank, and tower in connection with new waterworks, estimated to cost \$127,000.

The Louisville Petroleum Refining Co., 1415 Inter-Southern Building, Louisville, Ky., has awarded contract to the Gregg Construction Co., Louisville, for a new plant on the Western Parkway, including machine shop and power house, estimated to cost \$550,000 with equipment.

The Meeker Mfg. Co., Dayton, Ohio, axle manufacturer, has plans for a two-story factory at 326 South Main Street, to cost \$300,000 including machinery.

The Victor Stove Co., Salem, Ohio, will build a new plant at 220 Depot Street, to replace a structure recently destroyed by fire. C. C. Gibson is president.

Alexander M. Robinson, Georgetown, Ky., machinery dealer, has inquiries out for 6 steel oil storage tanks, 10 ft. in diameter, capacity 10,000-gal. each.

Cleveland

CLEVELAND, Nov. 10.

NOT only has sentiment in the machinery trade improved since election day but the market shows more life. Orders and inquiries increased slightly during the week and several buyers who have taken quotations on considerable machinery the past two or three months now show indications of releasing orders. This is particularly true of the Detroit territory where there are a number of outstanding quotations, largely but not wholly in the automotive field. Orders during the week include six turret lathes purchased from a Cleveland manufacturer by the Nash Motor Co. for its subsidiary, the Ajax Motors Co., Racine, Wis. Other orders were confined to one or two machines. A local manufacturer purchased two large presses. Bids were received today for the 70 machines recently inquired for by the Cleveland Board of Education for the Collinwood High School. A Cleveland manufacturer of planers reports the receipt of inquiries for 10 machines in the past few days.

Used machinery is in fair demand. The supply of good used tools in some lines, including radial drills, universal milling machines, punch presses and squaring shears, is by no means plentiful.

The Euclid Crane & Holst Co., Euclid, Ohio, has placed a contract with John Bakkala & Son, 2005 East 100th Street, Cleveland, for a one-story addition, 70 x 139 ft.

The National Carbon Co., Cleveland, has placed a general contract with the H. K. Ferguson Co., for an addition to its Fostoria plant. It will be one-story, 75 x 120 ft. Daniel Shock is the company's engineer at its general offices in Cleveland.

The Holden Realty Co., 315 Plymouth Building, Cleveland, has awarded a general contract to the Mitzel-Shields Co., Builders Exchange, Cleveland, for a one-story factory, 60 x 100 ft., to be occupied by the S. C. Thornton Co., sheet metal worker.

Crestline, Ohio, is planning the erection of a sewage disposal plant. George B. Gascoigne, Leader-News Building, is the consulting sanitary engineer.

The Cleveland Twist Drill Co., Cleveland, has taken bids for plant extensions and alterations. The George S. Rider Co., Century Building, is the engineer.

The Fairmount Tool & Forging Co., Cleveland, will build a one-story shop, 89 x 96 ft., to replace a building damaged by fire.

Mart Suhrbier, Builders Exchange, Cleveland, has been awarded the general contract for a one-story and basement factory, 100 x 100 ft., to be occupied by the Toledo Ignition Co.

The Columbus Heating & Ventilating Co., Columbus, Ohio, has taken bids for a two-story and basement factory building, 60 x 120 ft.

It is announced that the Bessler Movable Stairway Co., East Market Street, Akron, Ohio, plans the erection of a five-story plant, 100 x 120 ft.

The Henkel-Claus Mfg. Co., Fremont, Ohio, manufacturer of shears and cutlery, will centralize its manufacturing activities in one city and will erect a forge shop, warehouse and boiler house at an estimated cost of \$22,500.

The Leetonia Tool Co., Leetonia, Ohio, is inquiring for a universal grinder, 12 or 13 x 40 in., similar to Modern Tool Co. No. 3 or Morse Twist Drill No. 2.

Contract has been awarded to the H. K. Ferguson Co. by the Harris Automatic Press Co., Cleveland, for the erec-

tion of a factory unit on East Seventy-first Street, with total floor space of 7000 sq. ft.

The New Era Electric Mfg. Co., 4121 Woodland Avenue, Cleveland, manufacturer of outlet boxes, metal covers and outdoor electrical equipment has filed plans for a one-story factory, 50 x 83 ft. I. J. Samuels heads the company.

Detroit

DETROIT, Nov. 10.

THE Falleen Drop Forge Co., recently formed by Arthur and Gustave Falleen, Rockford, Ill., has purchased the plant of the Manistee Drop Forge Co., Manistee, Mich. The new owners will make alterations and install additional equipment.

Fire, Nov. 2, destroyed the plant of the American Vitri-fied Products Co., Grand Ledge, Mich., with loss of \$180,000 including machinery. Headquarters of the company are at Akron, Ohio.

The Holly Carburetor Co., Detroit, will build a one-story plant, 275 x 305 ft., on Jefferson Avenue, to cost approximately \$100,000.

The Board of Education, Lansing, Mich., plans the installation of manual training equipment in a two or three-story junior high school, estimated to cost \$400,000 with equipment. J. W. Churchill, 906 Prudden Building, Lansing, architect, prepared the plans.

The Murphy Iron Works, a subsidiary of the Sanford Riley Stoker Co., Worcester, Mass., will erect an addition to its plant on Atwater Street, for which a building contract has been awarded to the Cooper Wideman Construction Co., 4612 Woodward Avenue, estimated to cost \$35,000.

Wright & Nice, Flint Coal Co. Building, Flint, Mich., architects, have plans for a three-story automobile service, repair and garage building, 85 x 115 ft., estimated to cost \$90,000 with machinery.

The Detroit Edison Co., 2000 Second Street, Detroit, is considering plans for rebuilding the portion of its works at Geddes, Mich., recently damaged by fire, with loss approximating \$35,000.

The Briggs Mfg. Co., 3001 Leuschner Avenue, Detroit, manufacturer of automobile bodies, will begin work on a one-story addition, 56 x 160 ft., for which contract has been awarded to the Austin Co.

Pittsburgh

PITTSBURGH, Nov. 10.

WHILE machine-tool business in this district has not improved materially the past week, a decided gain in inquiry has been noted. In a few instances, some orders which have been held in abeyance pending the election have been placed, including one for about \$50,000 worth of pipe machinery. A number of lists are before the trade, among them those of the Central Tube Co. and the Edgar Thomson works of the Carnegie Steel Co., which are looked upon as particularly bright prospects. It may merely prove the result of the enthusiasm felt over the election, but sentiment is pretty general among machine tool men that there will be a forward surge in plant extensions and betterments and that 1925 will be a good year for machine tools.

The American Fork & Hoe Co., North Girard, Pa., has tentative plans for the rebuilding of portions of its works destroyed by fire Oct. 29, with loss reported at \$200,000.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, has plans for a five-story and basement storage and distributing building, 90 x 250 ft., estimated to cost \$350,000. Hunting & Davis, Century Building, are architects. Theodore Ahrens is president.

Work will start at once on the proposed new plant of the United Electric Light Co., on the Monongahela River, at Braddock, Pa., to cost \$750,000, including high tension line construction.

The Guyan Machine Shops, Inc., Logan, W. Va., machinery dealer, is in the market for a 150 kw. alternator, three-phase, 60-cycle, 2300 volts, for gas engine drive; hydraulic press about 250 tons, with motor-drive; 15-ton hydraulic press for armature shafts, and 300 hp. steam engine for driving generator.

The Board of Education, Donora, Pa., is said to be planning for the installation of manual training equipment in the two-story and basement high school, 130 x 160 ft.

being remodeled at a cost of \$225,000. C. C. Compton, Fourth and Thompson Streets, is architect.

The Capston Glass Co., South Connellsville, Pa., will begin work on a one and two-story building at its plant, providing 100,000 sq. ft. of floor space, for which contract was recently awarded to the Austin Co. One of the structures will be equipped as a machine shop. The work will cost \$150,000. G. F. Riegan is president.

The Bradford Brick & Tile Co., Bradford, Pa., is in the market for one 60-in. x 14-ft. openside planer and other equipment.

Manual training equipment will be installed in the new high school building to be erected by the Board of Education, Sewickley, Pa., for which plans have been prepared by P. O. Bowler, 613 Magee Building, Pittsburgh. It will cost about \$150,000. Walter E. Patton, 820 Centennial Avenue, Sewickley, is head of the board.

Morrison, Gross & Co., Elkins, W. Va., machinery dealer, has inquiries out for one 60 to 80-hp. stationary engine; also 20 to 30 ton 36-in. gage geared locomotive.

E. H. Morford & Co., Charleston, W. Va., are in the market for one Lidgerwood electric hoist with drum, capacity for 1800 ft. of 1-in. wire cable, driven by 75 or 100 hp. motor, a.c. 440-volt.

The Board of Education, Millvale, Pa., plans the installation of manual training equipment in a high school, for which F. McCrooks, 541 Third Avenue, Pittsburgh, architect, has plans. It will cost close to \$180,000 with equipment. C. G. Labor, 659 Evergreen Road, Millvale, is president of the board.

Electrical pumping and other machinery will be required in connection with a new sewage disposal plant to be erected at Farrell, Pa., for which a bond issue of \$100,000 has been authorized. Banks & Craig, Pittsburgh, Pa., are engineers in charge.

Milwaukee

MILWAUKEE, NOV. 10.

ALTHOUGH discounted in advance, the reelection of President Coolidge is exerting a beneficial effect upon machine-tool business, at least to the extent of imparting a definite degree of confidence which is expected to manifest itself with growing vigor in the coming months. Tool builders report more inquiry the past few days than in any week since last spring.

The Wisconsin Public Service Corporation, 559 Marshall Street, Milwaukee, has acquired a water power site of 180 acres on the Peshtigo River, near Crivitz, Wis., and has applied for a State permit to build a hydroelectric generating plant costing \$1,000,000. Specifications are being prepared for release immediately upon issuance of the permit. J. P. Pulliam is general manager.

The Sanitary Refrigerator Co., Fond du Lac, Wis., is remodeling its factory at a cost of \$100,000. The principal addition is a shop for fabricating steel refrigerators, 100 ft. sq., two stories, for which equipment is being ordered. Work is under way and should be completed by Jan. 1. The entire shop drive is being changed from line shafting to individual electric motors, which involves additions to the steam generating equipment. A new 100-ft. stack has been erected and the loading platform extended.

The Gilson Brothers Co., Port Washington, Wis., manufacturer of concrete mixers and other contractors' equipment, will build a new plant, 60 x 120 ft., costing about \$45,000. The general contract has been let to Albert Pergande, 445 Logan Avenue, Milwaukee.

The John Oster Mfg. Co., Racine, Wis., has been incorporated with a capital stock of \$50,000 to manufacture tools, dies, die castings, mechanical devices, hardware specialties and similar products. A plant at Sixteenth and Ann Streets has been leased and is now being equipped. John Oster, 3134 Osborne Boulevard, Racine, is president and general manager. With him are associated Oscar Lackner, 1232 Center Street, and Carl Bahnson, 1105 Milwaukee Avenue, Racine.

The Madison, Wis., Board of Industrial Education is ready to receive figures on the motor-driven and hand tool equipment for an addition to the central continuation school now being completed. H. Graven, 211 North Carroll Street, is director.

The Bell Machine Co., Oshkosh, Wis., manufacturing special metalworking tools, will build a one-story shop addition, 34 x 100 ft., to include also new office space. It will cost about \$30,000 including equipment. E. J. Bell is president and general manager.

The Cordes Supply Co., 67-71 Second Street, Milwaukee,

manufacturer and wholesaler of plumbing and steam heating supplies, equipment and materials, has acquired from the American Bridge Co. the site of its former Milwaukee fabricating shop on St. Paul Avenue, 200 x 310 ft., and expects to start work about Dec. 1 on the construction of a new plant and warehouse to cost about \$150,000. Details are now being prepared. Roy F. Cordes is president and general manager.

The Line Material Co., South Milwaukee, is in the market for a used testing machine, preferably Riehle Brothers or Tinius Olsen make.

Gulf States

BIRMINGHAM, NOV. 10.

MECHANICAL handling equipment, ice-manufacturing machinery, etc., will be installed in the proposed plant of the South End Ice Co., at West Webster Street, Houston, Tex., to cost approximately \$75,000, for which plans are being prepared by T. B. Hubbard Co., Bankers Mortgage Building, Houston.

The Voll Cooperage Co., Corinth, Miss., plans to rebuild the portion of its plant destroyed by fire Oct. 22, with a loss of approximately \$100,000 including equipment.

The City Council, Trinity, Tex., plans the installation of pumping equipment, in connection with new waterworks system to cost \$50,000, for which bonds recently were voted. F. F. Worth is engineer.

The Common Council, Port Arthur, Tex., will install a new waterworks system, including pumping equipment, to cost \$55,000. Terrell & Bartlett, Calcasieu Building, San Antonio, are engineers.

The Peoples Hydro-Electric Power Co., P. O. Box 1375, Birmingham, has applied for permission to begin work on its power development at Lock 2 on the Coosa River, in the vicinity of Gadsden, Ala.

The Ballinger Cotton Oil Co., Ballinger, Tex., plans to rebuild the portion of its plant destroyed by fire Oct. 29, with reported loss of \$175,000 including machinery.

The Pressed Metal Mfg. Co., Corpus Christi, Tex., will build a one-story factory, 110 x 180 ft., for which plans are being prepared, estimated to cost \$150,000.

The Common Council, Paducah, Tex., will install electric-pumping equipment in connection with new waterworks system to cost \$100,000. Gantt-Baker Co., Oklahoma City, Okla., are preparing plans.

The Mid-Continent Tank Car Co., Coffeyville, Kan., plans the erection of tank car shops at Shreveport, La., on which work will soon begin.

The American Spring Wheel Co., Waco, Tex., recently incorporated with \$200,000 capital stock, will manufacture by contract a patented spring wheel for automobiles. No award has been made and the company is open for propositions from manufacturers engaged in this line. Thomas J. Northern is president.

South Atlantic States

BALTIMORE, NOV. 10.

ELLIOTT W. REED and associates, Savannah, Ga., are organizing the Savannah Steel Corporation to operate with capital of \$200,000. About 40 acres at Port Wentworth, Ga., has been acquired including buildings formerly occupied by the Terry Shipbuilding Co., which will be remodeled and improved for the initial plant.

The Parker Metal Decorating Co., Howard and Ostend Streets, Baltimore, manufacturer of metal signs, will soon call for bids for a one-story factory, 42 x 135 ft., estimated to cost \$75,000 with equipment. C. N. and Nelson Friz, Lexington Building, are architects.

The Herfurth Engine & Machinery Co., Camden, S. C., has inquiries out for one air compressor, hand-operated, 25 cu. ft., 200-lb. pressure, belt-driven; ice-manufacturing machines, sizes 8 x 8, 9 x 9, and 10 x 10, belt-driven, in-closed model; 100-hp. water wheel; 6-in. molding machine, and motors, ranging from 5 to 30-hp., three-phase, 60-cycle.

The Continental Fibre Co., Newark, Del., will erect a two-story addition, 139 x 280 ft., for which contract has been awarded to the Austin Co., Philadelphia, Pa.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until Nov. 18 for miscellaneous equipment for the various yards, as follows: Wire rope, schedule 2845; cotter, escutcheon and taper pins, schedule 2857; for Eastern and Western yards, hinges, locks and latches, schedule 2856; hasp and staples, door hooks, brass stencils, bolts, plumbers' chain and other small hardware, schedule 2858; hacksaw blades, schedule

2876; for Philadelphia Navy Yard, 13 tube expanders, schedule 2861; for Mare Island, 15,400 lb. of sheet lead, schedule 2888, and 4000 lb. brass boat beading, schedule 2884; also 509 tube expanders, schedule 2861; for Puget Sound Navy Yard, 54 tube expanders, schedule 2861, and 28,000 lb. sheet steel; for the Norfolk, Va., yards, 2100 lb. iron or steel wire, schedule 2880; Washington yards, 10 tons steel shot or grit, schedule 2883.

A. Weiskettle & Son Co., Twelfth and East Lombard Streets, Baltimore, manufacturer of stoves, has plans for a three-story factory, 100 x 100 ft., to cost approximately \$100,000 with equipment, to replace a former works destroyed by fire. Anton Weiskettle is president.

The Virginia Machinery & Well Co., 1319 East Main Street, Richmond, Va., has inquiries out for a 125-hp. Corliss engine, direct-connected to generator.

The Chief of Air Service, United States Army, Washington, will receive bids until Nov. 24 for 100 airplane landing wheel assemblies, 4 x 28-in. straight side, circular CAS-43; also a quantity of starting and other switches and accessory equipment, circular CAS-42.

The Georgia Copper Co., operating properties in Lincoln and Wilkes Counties, Ga., have completed negotiations with New York interests for the financing of extensions and improvements in its works, estimated to cost \$2,000,000 with equipment. A. J. Whitaker is head of the company.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for one No. 3 Werner & Pfleiderer mixer, two mixers same type, size 11, with bronze fittings; 75-hp. motor, three-phase, 60-cycle, 2200-volt, 600 r.p.m., equipped with starters; switchboard for 175-kw., three-phase, 60-cycle, 220-volt generator, together with distributing panel; tower tank, 50,000 to 100,000-gal. capacity; six 150 k.v.a. or four 200 to 400 k.v.a. single-phase, 60-cycle, 660-volt high tension, 2200-550-volt low tension transformers.

Canada

TORONTO, Nov. 10.

THE erection of a number of new industrial plants in the Province of Ontario, together with the statement that the Baldwin Canadian Steel Corporation will resume activities next spring is taken by the machine tool trade as a sign that the demand for various classes of equipment will take a decided turn for the better. Buying by the automobile industry is almost entirely for one or two tools to a customer. While there has recently been some improvement in demand from the iron and steel industry and the British Empire Steel Corporation, Sydney, N. S., has bought for replacement purposes and to improve its operating facilities, there is still a large volume of equipment to be purchased on this account. Railroad buying has been confined to an occasional order for replacements.

The Department of Forests and Mines, Parliament Buildings, Toronto, which recently awarded contract for the erection of an airdrome and machine shop at Sault Ste. Marie, Ont., to cost \$150,000, will purchase machine tools, lathes, drills, planers, etc., for the machine shop.

A. Denesha, Pitt Street, Cornwall, Ont., will build an addition to his foundry and is interested in equipment.

M. I. McDonald, Murray, N. S., will build a shingle mill and sawmill and is interested in steam-operated equipment and tools.

W. W. Hiltz, chairman of the Board of Control, Toronto, is in the market for one 3,000,000 Imperial gal. centrifugal sludge pump and motor; one steam-driven air compressor; one steam road roller. Bids will be received until Jan. 20.

R. T. Walsh, Ormstown, Que., will build a flour mill there to cost \$75,000 and is interested in prices on equipment.

William F. Sparling & Co., 54 University Avenue, are receiving bids for addition to the factory of the Dominion Envelope & Carton Co., Toronto, Ont.

The Abitibi Power & Paper Co., Ltd., Iroquois Falls, Ont., is having plans prepared for additions to the plant, dam and power development works at Long Sault Rapids, Abitibi River, about 40 miles below the present works. It is the intention of the company to develop an additional 30,000 hp., and also to install additional machines in its paper mill to considerably increase the capacity. George F. Hardy, 309 Broadway, New York, is engineer. The proposed development will cost approximately \$5,000,000.

The Hoyt Metal Co., Eastern Avenue and Lewis Street,

Toronto, contemplates the erection of a new plant to cost \$250,000.

C. S. Sutherland, Ltd., Edmonton, Ont., is inquiring for second-hand 8-lb. and 12-lb. rails.

Dodge Brothers, Ltd., Canada, has completed negotiations for leasing, with an option to purchase, the Dufferin Street, Toronto, property, formerly occupied by the Canadian Airplanes, Ltd. An assembly plant will be established which will be largely devoted to export business. The company will start at once to put the building in shape and install machinery.

The Remington Typewriter Co., of New York, has completed arrangements for the erection of a plant in Toronto, construction to start next spring. It will manufacture machines for use throughout the British Empire.

The plans of the International Paper Co., Three Rivers, Que., which is reported to have taken over properties formerly belonging to the Riordon Pulp & Paper Co., provide for the erection of a pulp and paper mill at Chelsea, Que., to cost \$3,000,000.

Western Canada

The Wallace Shipbuilding & Drydock Co., North Vancouver, B. C., has taken out a permit for the erection of a machine shop and office building, in connection with its floating drydock, to cost \$950,000.

Pacific Coast

SAN FRANCISCO, Nov. 5.

THE Enterprise Engine Co. of San Francisco has been formed by a merger of the Western Machinery Co. of Los Angeles, and company of the former name, to operate with headquarters in Los Angeles, where 10 acres is being acquired for the construction of a new plant estimated to cost \$500,000 with equipment. The San Francisco works of the Enterprise company will be continued in operation as a branch unit. William Angus will be president and general manager of the new organization.

Ovens, power equipment and conveying machinery will be installed in the seven-story and basement plant, 196 x 251 ft., to be erected by the National Biscuit Co., Los Angeles, estimated to cost \$600,000 with machinery, for which bids are being asked. Eckles & Eckles, St. Joseph, Mo., are architects.

The Hofus Steel & Equipment Co., First Avenue and Spokane Street, Seattle, Wash., manufacturer of locomotives, etc., has filed plans for a structural steel shop, frog-switch shop, roundhouse and office and warehouse building, estimated to cost about \$175,000, for which plans were prepared by the Austin Co.

The Schmidt Lithograph Co., Second and Bryant Streets, San Francisco, is receiving bids for its four-story and basement addition, 145 x 240 ft., for which plans have been prepared by Maurice Couchot, 60 Sansome Street, San Francisco, architect.

The Pacific Elevator Co., 1129 Howard Street, San Francisco, has plans for a two-story brick works at Rausch Street to cost about \$50,000 with equipment. Baumann & Jose, 251 Kearney Street, San Francisco, are architects.

The Pacific Electric Mfg. Co., 827 Folsom Street, San Francisco, manufacturer of high voltage circuit breakers, etc., has work in progress on its one-story factory, 100 x 300 ft., estimated to cost \$65,000, for which plans were prepared by George H. Wiermeyer, 57 Post Street, architect.

The Board of Education, San Jose, Cal., plans the installation of manual training equipment in a new two-story junior high school at San Jose, for which plans have been prepared by W. H. Weeks, 369 Pine Street, San Francisco, architect. It is estimated to cost \$250,000.

The Commercial Drop Forge Co., Warren, Pa., organized in 1920, which suspended operations several weeks ago, has petitioned for a receivership, setting forth liabilities of \$98,299 and assets as per inventory of approximately \$210,270.

The Pittsburgh Steel Co. reports a net loss of \$354,837 for the quarter ended Sept. 30, against \$561,718 in the same period last year. Sales for the third quarter this year were valued at \$3,918,653, as compared with \$4,008,063 in that quarter in 1923.

The American Steel Foundries report net profit for the nine months ended Sept. 30 of \$3,588,706 after charges, Federal taxes and depreciation, equivalent, after preferred dividends, to \$4.31 a share on common stock outstanding. This compares with \$5,727,044, earned in the corresponding period of 1923.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates		Per Lb.
Refined iron bars, base price.....	3.24c.	
Swedish charcoal iron bars, base.....	7.00c. to 7.50c.	
Soft steel bars, base price.....	3.24c.	
Hoops, base price.....	4.49c.	
Bands, base price.....	3.99c.	
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.34c.	
Channels, angles and tees under 3 in. x ¼ in., base.....	3.24c.	
Steel plates, ¼ in. and heavier.....	3.34c.	

Merchant Steel		Per Lb.
Tire, 1½ x ½ in. and larger.....	3.20c.	
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	3.55c.	
Toe-calk, ½ x ¾ in. and larger.....	4.20c.	
Cold-rolled strip, soft and quarter hard.....	7.00c.	
Open-hearth spring steel.....	4.50c. to 7.00c.	
Shafting and Screw Stock:		
Rounds.....	4.05c.	
Square, flats and hex.	4.55c.	
Standard tool steel, base price.....	15.00c.	
Extra tool steel.....	18.00c.	
Special tool steel.....	23.00c.	
High-speed steel, 18 per cent tungsten.....	70c.	

Sheets		Per Lb.
Blue Annealed		
No. 10.....	3.89c.	
No. 12.....	3.94c.	
No. 14.....	3.99c.	
No. 16.....	4.09c.	

Box Annealed—Black		Per Lb.
Soft Steel		
C. R. One Pass		
Per Lb.		
Nos. 18 to 20.....	4.30c. to 4.45c.	
Nos. 22 and 24.....	4.45c. to 4.60c.	5.10c.
No. 26.....	4.50c. to 4.65c.	5.15c.
No. 28*.....	4.60c. to 4.75c.	5.25c.
No. 30.....	4.70c. to 4.95c.	

Galvanized		Per Lb.
No. 14.....	4.70c. to 4.85c.	
No. 16.....	4.85c. to 5.00c.	
Nos. 18 and 20.....	5.00c. to 5.15c.	
Nos. 22 and 24.....	5.15c. to 5.30c.	
No. 26.....	5.30c. to 5.45c.	
No. 28*.....	5.60c. to 5.75c.	
No. 30.....	6.10c. to 6.25c.	

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Standard Steel		Wrought Iron	
Black Galv.		Black Galv.	
½ in. Butt... —41 —24		½ in. Butt... —4 —19	
¾ in. Butt... —46 —32		¾ in. Butt... —11 +9	
1-3 in. Butt... —48 —34		1-1½ in. Butt... —14 +6	
2½-6 in. Lap... —44 —30		2 in. Lap... —5 +14	
7-8 in. Lap... —41 —11		2½-6 in. Lap... —9 +9	
9-12 in. Lap... —34 —6		7-12 in. Lap... —3 +16	

Bolts and Screws		
Machine bolts, cut thread,	45 and 10 per cent off list	
Carriage bolts, cut thread,	35 to 35 and 10 per cent off list	
Coach screws, 45 and 10 per cent off list		
Wood screws, flat head iron,	75, 20, 10 and 5 per cent off list	

Steel Wire		Per Lb.
BASE PRICE* ON NO. 9 GAGE AND COARSER		
Bright, basic.....	4.25c. to 4.50c.	
Annealed soft.....	4.50c. to 4.75c.	
Galvanized annealed.....	5.15c. to 5.40c.	
Coppered basic.....	5.15c. to 5.40c.	
Tinned soft Bessemer.....	6.15c. to 6.40c.	

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE		
High brass sheet.....	17½c. to 19½c.	
High brass wire.....	18½c. to 19½c.	
Brass rods.....	15½c. to 16½c.	
Brass tube, brazed.....	25½c. to 26½c.	
Brass tube, seamless.....	22 c. to 23 c.	
Copper tube, seamless.....	23½c. to 24½c.	

Copper Sheets

Sheet copper, hot rolled, 20½c. to 21½c. per lb. base.	
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	

Tin Plates

Bright Tin		Coke—14 x 20		Prime	Seconds
Grade "AAA"	Grade "A"				
Charcoal 14x20	Charcoal 14x20	80 lb..	\$6.15	\$5.90	
		90 lb..	6.30	6.05	
		100 lb..	6.45	6.20	
IC..	\$11.25	IC..	6.65	6.40	
IX..	12.85	IX..	7.85	7.60	
IXX..	14.40	IXX..	9.00	8.75	
IXXX..	15.75	IXXX..	10.35	10.10	
IXXXX..	17.00	IXXXX..	11.35	11.10	

Terne Plates

8 lb. coating, 14 x 20		
100 lb.	\$7.00 to \$8.00	
IC.....	7.25 to 8.25	
IX.....	8.25 to 8.75	
Fire door stock.....	9.00 to 10.00	

Tin

Straits, pig.....	56c.
Bar.....	60c. to 64c.

Copper

Lake ingot.....	16 c.
Electrolytic.....	15½c.
Casting.....	14½c.

Spelter and Sheet Zinc

Western Spelter.....	7½c.
Sheet zinc, No. 9 base, casks.....	10.85c. open 11.60c.

Lead and Solder*

American pig lead.....	10c. to 10½c.
Bar lead.....	13c. to 15c.
Solder, ½ and ½ guaranteed.....	40c.
No. 1 solder.....	37c.
Refined solder.....	31c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic.....	14c. to 15c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.....	36c.
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Old Metals

The general tone of the market is firm and trading is active. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible.....	11.50
Copper, heavy wire.....	11.00
Copper, light bottoms.....	9.25
Brass, heavy.....	7.00
Brass, light.....	5.50
Heavy machine composition.....	8.50
No. 1 yellow brass turnings.....	7.50
No. 1 red brass or composition turnings.....	8.00
Lead, heavy.....	7.75
Lead, tea.....	6.00
Zinc.....	4.00
Cast aluminum.....	16.00
Sheet aluminum.....	16.00